

**A Qualitative Assessment of the Saskatchewan Medication Assessment
Program in Patients with Renal Failure or Renal Replacement**

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Abstract

Background: The Saskatchewan Medication Assessment Program (SMAP) is a provincially funded service enabling community pharmacists to perform medication reviews for eligible Saskatchewan residents, with the goal of optimizing patient care. Individuals with renal failure, and/or those requiring renal replacement therapy have unique needs and receive specialized care provided by nephrologists and renal pharmacists. Little is known about the benefits and/or challenges of performing community based medication assessments in complex populations.

Objective: A qualitative analysis was undertaken to examine the perceptions of health care providers involved in the SMAP process in complex patients (i.e. renal patients).

Methods: All nephrologists, renal pharmacists, and community pharmacies in Saskatoon and Regina were sent an invitation to participate in the study. A semi-structured interview was completed with interested participants, and the interviews were audio-recorded and transcribed verbatim. Coding was performed using NVIVO qualitative software to identify common themes.

Results: Ten renal pharmacists, eight nephrologists, and nine community pharmacists were interviewed. Community pharmacists had mixed levels of comfort providing SMAPs for renal patients, but expressed the desire to provide the best care possible. Some themes were consistent amongst all participant groups including ‘the importance of collaboration/communication’, ‘challenges’ and ‘suggestions for improvements’. Specific themes such as ‘unique needs of renal patients’ and ‘duplication of service’ were common amongst both renal pharmacists and nephrologists. The nephrologists had very little knowledge of the program and of the role of the community pharmacist, indicating the need for improved education and communication.

Conclusion: Despite some negative experiences, none of the participants believed the program should be eliminated. Several recommendations, however, are suggested to improve the SMAP process in renal patients.

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Dedications

1. My mother: Thank you for being more than a mother to me. Throughout my life, you have also been a best friend and older sister. You have believed in me when I did not believe in myself. You have held my hand as a child and you continue to hold my heart as an adult. I love you always and no words I can ever say will be enough to thank you...for everything.
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Introduction

Across Canada, the role of the pharmacist has been expanding to include a variety of clinical responsibilities. For instance, several provinces are now allowing community pharmacists to perform medication assessments and bill the government for this service.¹ A medication assessment involves a thorough medication history, critical examination of the patient's medications and feedback to the patient and physician.¹⁻³ The Saskatchewan Medication Assessment Program (SMAP) was introduced in 2013, to allow Saskatchewan residents meeting certain criteria to receive this service.¹

There are several potential benefits of performing an SMAP.⁴ These include improving patient safety, optimizing medication adherence, preventing drug related problems, emergency visits and hospitalizations and reducing duplication and/or wastage of medication.⁴ Furthermore, the SMAP provides the patient with the opportunity to discuss medication concerns with the pharmacist without time constraints.² It also provides an opportunity for the pharmacist to assess whether or not the patient fully understands his/her medications and could benefit from other pharmacy services such as blister packing or medication reminders.³

Individuals with renal failure, and those requiring renal replacement therapy such as dialysis or a kidney transplant are a complex subset of patients. They have unique needs, and multiple comorbidities and medications, which generally require the specialized care of a nephrologist.⁵ Recognizing these complexities, the Saskatoon Health Region also employs several specialized renal and transplant pharmacists to work exclusively with the renal team.

Performing an SMAP for complex renal patients in the community pharmacy may pose several challenges as community pharmacists may not be familiar with the nuances of specialized care that they require. Furthermore, when multiple physicians are involved in a patient's care it can be difficult for the pharmacist to know which physician to direct the SMAP recommendation to.⁶⁻⁷ Performing a comprehensive SMAP is time intensive, particularly with a complex patient. This can pose additional challenges to workload in a busy pharmacy setting. Whether or not community pharmacists have the confidence and/or desire to analyze laboratory and clinical information and make medication recommendations on a complex renal patient has never been explored.⁵⁻⁷ It is also unclear whether performing an SMAP in this population is a duplication of services that are already being provided by the specialized pharmacists in the health region.

The overall goal of this project is to examine the SMAP process in a renal population. This will be accomplished by undertaking a qualitative analysis to characterize the perceptions of the community pharmacists, specialized renal pharmacists, nephrologists and patients impacted by the SMAP process.

Literature Review

Pharmacist Scope of Practice

Over the last number of years, the role of the pharmacist has dramatically changed from a product-centered approach to one that is more patient centered. According to the World Health Organization (WHO), a community pharmacist is defined as the health professional most accessible to the public who is responsible for counselling patients on prescriptions, providing drug information to health professionals and participating in drug promotion programs.⁸ The Canadian Pharmacists Association (CPhA) defines the pharmacist as the medication management expert of the health care team who is responsible for delivering a range of innovative services.⁹ Both definitions recognize the pharmacist as a member of the health care team that provides professional services, rather than the traditional role of dispensing medications.

While legislation varies provincially, pharmacists in Canada can now provide enhanced clinical services such as prescribing medications for minor ailments, conducting medication assessments, analyzing/ordering lab tests, offering smoking cessation programs and administering drugs by injection.⁹ Optimizing the role of the pharmacist can potentially benefit patients in several ways. Pharmacists can play a proactive role in health care by providing patients with medication information, encouraging self-care decisions, and ensuring that patients are receiving proper chronic care management.¹⁰ George and colleagues summarized the literature regarding the evolving role of the pharmacist in chronic care management and found evidence to support the effectiveness of community pharmacist interventions in lipid, diabetes and hypertension management as well as preventative services such as weight loss, immunization clinics and osteoporosis prevention.¹⁰

A randomized controlled trial by Hanlon and colleagues investigated the role of the pharmacist in the provision of pharmaceutical care to elderly patients taking multiple medications.¹² The study included 208 patients aged 65 years and older with polypharmacy (>5 chronic medications), who visited a general medicine clinic of a Veterans Affairs Medical Center. In the intervention arm, a clinic pharmacist met with all patients during all clinic visits to make drug recommendations, while standard care consisted of no pharmacist involvement. Outcome measures included prescribing appropriateness, health-related quality of life, adverse drug events, medication knowledge, number of medications, patient satisfaction and physician

receptivity. Patients who received care from the clinic pharmacist experienced a reduction in inappropriate prescribing and adverse effects. Physicians were more receptive to the interventions and enacted changes recommended by the clinic pharmacist more frequently than performing changes independently with the control group. There were no differences between the intervention and control groups in the remaining outcome measures.¹²

Perceptions of the Pharmacists' Scope of Practice

It appears that the general public is supportive of the growing scope of pharmacy practice. A cross sectional telephone survey conducted in Newfoundland and Labrador investigated patient attitudes regarding the role of the community pharmacist.¹³ To ensure representation throughout the province, a random selection of residential phone numbers sorted into urban and rural regions was obtained from InfoCanada, a Canadian supplier of business and consumer data. A total of 380 surveys were completed from 1282 calls for a response rate of 29.6%. Participants who visited the pharmacy more regularly were more aware of the services available through the community pharmacist, and 77% of participants expressed interest in expanded pharmacy services.¹³

Physicians, seem to be generally supportive of the evolving role of pharmacists. In 2003, the Canadian Medical Association (CMA) issued a joint statement endorsed by the Canadian Pharmacists Association and the Canadian Nurses Association on the determination of shared scopes of practice for allied health professionals to meet the increasing health care needs of Canadians.¹⁴ The statement reinforced that expanded scopes of practice must put the patient first under all circumstances.¹⁴ In another statement, the Canadian Medical Association mentioned the importance of outlining the joint responsibilities of the pharmacist and physician with regards to patient care and strongly recommended the need for reciprocal communication.¹⁵ To achieve this, the CMA recommended the integration of interprofessional education for physicians, and for pharmacy and medicine students at the graduate and post graduate levels.¹⁵

Farrell and colleagues administered a questionnaire to physicians after the integration of a pharmacist into their family practice (n=36).¹⁶ The questionnaire was mailed to physicians in seven sites at the 3rd, 12th and 19th month after the integration of pharmacists to the clinics. Family physicians initially perceived their own contributions to be larger than the pharmacists' with respect to medication management. Over time, the physicians' perceptions changed to

reflect increased value placed on the clinical competency of the pharmacist and comfort in sharing responsibilities.¹⁶

A study by Ranelli and colleagues investigated the perceptions of primary care physicians regarding communication with pharmacists.¹⁷ Physicians were divided into phase 1 and 2. Phase 1 physicians received structured interviews (n=6) and phase 2 physicians received surveys. Surveys were sent to 313 primary care physicians in phase 2 and 176 surveys were returned (response rate = 59.1%). Although a quarter (25%) of physicians indicated having personal contact with pharmacists, 20.6% reported rarely having any interaction and indicated the office nurse had the most interaction with the pharmacist. Physicians indicated they were most comfortable with pharmacists' responsibilities in catching prescription errors, providing patient education and suggesting non-prescription medications to patients. The most negative experiences described pharmacists' scaring the patient and providing interim supplies of medication without notifying the physician.

Pharmacists themselves appear to have mixed perceptions about their increasing scope of practice. In a study in Scotland, a comparative analysis of 4 cross-sectional population surveys (1995, 2000, 2006, 2010) was undertaken to investigate the role of the community pharmacist with addictions patients.¹⁸ The survey was sent to 1246 Scottish pharmacies and was completed by the lead pharmacist (response rate 57%, n=709/1246). Results from the study revealed that pharmacy workforce attitudes and service engagement improved over time, while communication with the wider addiction team requires further development. When the same survey was repeated in 2014, 53% of pharmacists felt included in the addictions team (which was an improvement from the 44.4% in 2006 who expressed they were somewhat included). Although there was an improvement in workforce attitudes from 2006 to 2014, the pharmacists had mixed perceptions with regards to communicating with the wider addiction team. It is important to note that nearly a third of the cohorts in both studies, however, felt their role was not valued.¹⁸

In a study in the United Kingdom, the impact of increasing workload and role expansion was investigated in female community pharmacists via face to face interviews.¹⁹ Interviewees were asked about perceptions of their working conditions, views of recent changes in pharmacy and future career plans (n=30). Results suggested that although the community pharmacists included in the study enjoy aspects of their job, their work environment has become increasingly

pressurized resulting in decreased personal health and well-being. In another study, semi-structured interviews were used to investigate the perceptions of community pharmacists (n=20) who participated in the General Practitioner-Pharmacist Collaboration (GPPC) Study.²⁰ The GPPC study investigated the outcomes of community pharmacists performing medication reviews with family physicians and the potential barriers that could occur during the collaboration process. Pharmacists that were interviewed perceived medication reviews to be very important, but believed they lacked the skills and confidence to provide this level of information.²⁰

Pharmacists' perceptions aside, several other factors may serve as barriers to expanding professional services even further within the community pharmacy. These include poor relationships amongst pharmacists and physicians, lack of access to patient information such as laboratory information, time constraints and inadequate compensation.^{11,12,17} These challenges have been noted when performing medication reviews.^{1,17,20}

Medication Assessments

A medication assessment or medication review is a one-on-one appointment with a patient or caregiver to review the patient's complete set of medications with the goal of addressing drug-related problems or patient concerns.²¹ A medication review is also intended to improve the patients' understanding of their medications, including what medications they are taking, why they are being taken, and how to best take them.²¹ Medication reviews can be performed in physicians' offices or private consultation areas in pharmacies, and community pharmacists are in an ideal position to provide this service due to their direct accessibility to the public.⁴⁻⁶ Research suggests that community pharmacists who build close relationships with patients may be more familiar with their medication needs, compared to pharmacists who do not strive for close relationships. These pharmacists may benefit the health care team by sharing their knowledge about this patient.¹⁶⁻¹⁸ To provide seamless patient care and avoid confusion, however, it is essential that the pharmacist's recommendations are shared with the patient's primary care provider as well as other specialists in the patient's circle of care.^{17,20,28}

Medication Assessment Programs Across Canada

In 2007, Ontario was the first province to introduce MedsCheck which allowed community pharmacists to perform medication reviews and bill for the program.⁵⁰ Since then, other provinces have followed suit. While the terminology used to describe the programs may vary, currently 8 of the 10 provinces in Canada have a provincially funded program that reimburses medication reviews. Manitoba, Quebec and the territories offer a series of clinical programs but do not have a provincially funded medication review program.

In order to be eligible to receive a medication review, patients must meet specific criteria, which vary from province to province. In Newfoundland and Labrador, a medication review is offered to diabetic patients taking oral hypoglycemic drugs and/or insulin.⁵¹ Prince Edward Island (PEI) residents, on the other hand, must be taking three or more chronic medications covered by PEI Pharmacare programs and they must be participants in either Seniors' drug cost assistance, financial assistance or reside in a nursing home to be eligible for a medication review.⁵² In Nova Scotia, patients can qualify for a basic medication review or an advanced medication review. The basic medication review requires that they do not reside in a nursing home or receive their medications in compliance packaging and they must be taking three or more chronic medications.⁵³ The advanced medication review is reserved for patients residing in nursing homes who do not receive compliance packaging and they must be taking four or more prescription medications or one of the designated medications such as methyldopa, indomethacin, cyclobenzaprine, diazepam, chlorthalidone, clonazepam and amitriptyline. New Brunswick, on the other hand, offers the Pharmacheck program for seniors taking 3 or more chronic medications.⁵⁴

To qualify for the Medscheck in Ontario, patients must be taking three or more prescription medications for a chronic condition.⁵⁰ Ontario also offers a specific service for patients living with diabetes, or living in long term care residences. Medscheck at Home, a service to provide the medication review at the patient's home is offered to individuals taking 3 or more chronic medications and unable to come to the community pharmacy.

Alberta residents, in contrast, may qualify for the Comprehensive Plan for Albertans or the Standard Medication Management Assessment for Albertans.⁵⁵ To qualify for the Comprehensive Plan for Albertans, individuals must have complex needs, which is defined as the presence of both chronic conditions and risk factors. There are two categories of patients with

complex needs: those with at least two chronic conditions, and those with one chronic condition and at least one risk factor. Eligible chronic conditions include: hypertension, diabetes, chronic pulmonary obstructive disorder (COPD), asthma, heart failure, ischemic heart disease and mental health disorder. Risk factors include: tobacco use, obesity and addictions. The Standard Medication Assessment for Albertans requires patients to have at least one chronic condition and be taking at least three different prescription medications, or two prescription medications and insulin.

In British Columbia, medication review services are provided to patients based on clinical need.⁵⁶ Clinical need is obtained when a prescriber requests a medication review, the patient has multiple disease states, the patient's medication regimen contains at least one non-prescription medication, at least one herbal product, the patient has a drug therapy problem, the patient has been recently discharged from the hospital, the patient has multiple prescribers or the patient is taking a medication that requires laboratory monitoring.

The Saskatchewan Medication Assessment Program (SMAP) was introduced in 2013.^{1,4} To receive a medication review in Saskatchewan, patients must be community based or live in their own residence, live in a private care home or licenced personal care home, be 65 years of age or above, take five or more medications (prescription and non-prescription), of which three must appear on the patient's pharmaceutical information program (PIP) profile, or take an anticoagulant medication, or a medication listed in the most current edition of the American Geriatrics Society (AGS) BEERs criteria for potentially inappropriate use in older adults.^{1,4} Patients in Saskatchewan may also be eligible for compliance packaging with the medication assessment program if they are home care or mental health patients, with at least one medication in their compliance packages covered by the Saskatchewan drug plan.⁴ In order to be eligible, patients must be nominated by a Regional Health Authority Assessor or a home care nurse.

To receive a medication assessment in Saskatchewan, the patient must provide both verbal and written consent to receive the service and share any information with other health professionals in the patient's circle of care.^{1,4} It is important to note that the documentation forms for the SMAP program have changed as of September 2017. The new forms have a greater clinical focus and more detailed descriptions for reporting drug therapy problems. However, the criteria remain the same.

Complexities of Renal Patients

Patients with kidney disease are generally a complex group of patients who are on several medications and visit community pharmacies regularly.^{22,24} Complications of kidney disease include, but are not limited to: fluid and electrolyte abnormalities, anemia, secondary hyperparathyroidism, hypertension, hyperlipidemia, metabolic acidosis, malnutrition, pruritus and uremic bleeding.²² Chronic Kidney Disease (CKD) is divided into five stages with the final stage being end stage renal disease (ESRD). Patients with CKD require additional health care provider support to manage complications and to slow down the progression of their disease. Patients with end stage renal disease (ESRD) eventually require renal replacement in the form of a kidney transplant, or dialysis (such as hemodialysis or peritoneal dialysis). Patients with CKD, and dialysis usually have a heavy pill burden and take an average of 12.6 medications.²²

Kidney transplant recipients are another complex group of patients with multiple medical needs. Despite improved quality of life and mortality with kidney transplantation, there are still several key challenges that must be considered.²⁵ Immunosuppressive medications are necessary to prevent rejection of the new organ, which can lead to adverse effects and often require additional medication management. Medication adherence is essential for preventing rejection and maintaining optimal health. Transplant recipients are at an increased risk for other comorbidities such as hypertension, cardiovascular disease, diabetes and more, and may require medications to treat or prevent risk. Minimizing the risk of cancer and treating infections aggressively are particularly important. Monitoring drug levels and managing drug interactions with immunosuppressive medications are essential for the long-term health of the transplant.

For the purpose of this study we will collectively refer to ‘renal patients’ as patients with CKD, patients on dialysis (hemodialysis or peritoneal), as well as those who have received a kidney transplant. As a collective group, these patients pose several challenges for the health care providers involved in their care.²⁶⁻²⁸ Drug-related problems are common in this population, including drug interactions, suboptimal lab monitoring and inappropriate drug dosing.²⁶ Renal patients also demonstrate high rates of medication non-adherence, which can have negative consequences, such as kidney rejection, suboptimal control of chronic conditions such as hypertension and diabetes, increased risk for infection and quicker progression to end-stage renal disease (ESRD) and/or dialysis.^{22,25}

Evidence to Support Pharmacist Involvement in Renal Care

A systematic review was conducted using Medline, Embase, and International Pharmaceutical Abstracts to investigate the impact of the clinical pharmacist on the care of CKD and ESRD patients.²³ The review included disease-oriented outcomes (total cholesterol, LDL, HDL, systolic/diastolic blood pressure, hematocrit, ferritin, hemoglobin, hemoglobin A1C (HbA1C) and drug dosages for Eprex and iron) and patient oriented outcomes (rate of hospitalization, length of stay, health related quality of life, medication knowledge, renal quality of life and patient satisfaction survey). Some of the interventions performed by clinical pharmacists such as adjusting doses, adding new drugs or identifying drug interactions positively impacted patient oriented outcomes, while pharmacist participation in diabetes control and anemia management had a positive impact on disease oriented outcomes. Anemia was the most common comorbidity managed by clinical pharmacists and the involvement of the pharmacist led to significant control of hemoglobin levels.

Community pharmacists can also assist in identifying patients with CKD. The Rx EACH study involved 55 community pharmacies in Alberta and involved an online tool called CKD Clinical Pathway, modelled after the National Institute for Health and Care Excellence (NICE) tool.²⁹ The CKD Clinical Pathway was developed by a team of stakeholders including pharmacists, nephrologists, primary care physicians, nurses and other allied health professionals to aid in the diagnosis, management and referral of potential CKD patients in the community.²⁴ During the study period, community pharmacists screened 720 at-risk patients, and of them 39% had CKD. Of note, 40% of these patients (16% of the total screened) had no record or knowledge of a previous CKD diagnosis (“unrecognized” CKD).

Although renal patients are often cared for in the hospital setting due to the acute nature of the disease, outpatient care is vitally important to ensure adequate patient outcomes.²³⁻²⁸ Renal patients are often managed by a variety of health care professionals, which can create confusion, especially regarding medications. One study in CKD indicated that patients believed their medications were not appropriate; however, patients rarely discussed these beliefs with their health care providers even though they were seen by an average of 4.6 health professionals in the hospital and community settings.²⁷

Potential Benefits of Performing Medication Assessments in Renal Patients

Gaps in care have been documented, especially during transitions from the hospital to the community setting.^{23,28} Eliminating these gaps will require a re-evaluation of the current care model and the role of team members included in the model.²⁸ Comprehensive medication reviews performed routinely could potentially improve care by identifying drug therapy problems, developing a care plan to meet patient specific goals and following up with patients at regular intervals.²⁸ Medication assessments in the community setting could prove to be particularly beneficial, since medication reconciliation by multidisciplinary teams at hospital discharge cannot meet the need for ongoing follow up in the community setting.²⁸

The SMAP program policy statement outlines several purposes for medication reviews in Saskatchewan.⁴ These are: to provide safe and effective medication therapy to seniors living in the community, to improve patient safety and outcomes, to prevent emergency room visits, hospitalizations and drug related problems, to reduce duplication/wastage of medication, to optimize medication adherence, and to assist the patient/caregiver with appropriate and cost effective medication administration.⁴ Theoretically speaking, renal patients seem like an excellent group to target this intervention. They experience higher than average rates of hospitalizations, they have a huge pill burden and often experience drug related problems. Furthermore, they exhibit high rates of non-adherence, and improving medication adherence could translate into improved patient outcomes.²⁷ No studies to date, however, have examined the effectiveness of performing medication assessments in this population.

Potential Challenges of Performing Medication Assessments in Renal Patients

Despite the putative benefits of medication reviews for renal patients in community pharmacies, several challenges to their success can be recognized. Performing an SMAP can be time intensive, since these patients have multiple medications and comorbidities. Furthermore, completing a proper medication assessment may be difficult to accomplish in a busy community pharmacy setting.^{10,11}

Advanced knowledge and skills is often necessary for health care professionals to understand the nuances of specialized care.³⁰ While there are several programs and certifications available to pharmacists to enrich their skills, no specific certification exists to provide competence on managing renal patients. Whether or not community pharmacists have the

confidence and/or desire to analyze laboratory and clinical information and to make SMAP recommendations on a complex renal patient has never been explored.

The lack of remuneration could be another potential barrier to performing medication assessments in renal patients.^{1,31} Some renal patients may benefit from a medication assessment, but may not meet the eligibility set forth by the Saskatchewan government to receive the review free of charge.

Pharmacist-physician communication or role confusion, could pose obstacles with performing medication reviews.³²⁻³⁴ A qualitative study investigated perspectives of physicians, pharmacists and patients with eight focus groups.³³ Both physicians and pharmacists had incongruent beliefs with each perceiving their own group to be the most equipped to provide medication information to patients.³³ Differing beliefs and expectations could lead to overlapping, inefficient efforts that result in the lack of proper communication to the patient regarding his/her medications.³³ Since specialized renal pharmacists are often involved in the care of renal patients, this adds an additional layer of complexity; communication issues and role confusion may occur between the community and renal pharmacist.

Finally, in many institutions, nephrology teams play a large role in medication management of renal patients. Thus, it is essential that the renal team receives any medication assessments undertaken on these patients to ensure that all health professionals are on the same page and to decrease the likelihood for duplicate prescribing and miscommunication.^{33,34} Community pharmacists performing the medication assessments may not realize the need to communicate with the renal team.

Summary

The role of the pharmacist has evolved considerably and evidence suggests that community pharmacists play a positive role on chronic care management teams.³⁻¹⁰ Patients, physicians and community pharmacists are generally supportive of the expansion of pharmacy services. Community pharmacists could positively impact patient care by performing medication reviews in specialized populations, such as renal patients. Nevertheless, several theoretical concerns exist that could affect the success of medication review programs in these patients. More research is warranted to evaluate the effectiveness of medication assessments performed by community pharmacists in renal patients and to examine stakeholder perceptions.

The purpose of this project is to examine the SMAP process in a complex renal population. This will be accomplished by evaluating the perceptions of the community pharmacists, specialized renal pharmacists, nephrologists and patients impacted by the SMAP process.

Research Questions

1. How familiar or unfamiliar are the health care providers with the SMAP process?
2. How satisfied or unsatisfied are the health care providers with the SMAP process?
3. What types of challenges (if any) are present with the SMAP process?
4. How comfortable or uncomfortable are community pharmacists with performing SMAPs on renal patients or other complex patients?
5. What suggestions (if any) could be made to improve the SMAP process in complex patients?

Methodology

Research Setting

The research was conducted in two health regions: The Saskatoon Health Region and the Regina Qu'Appelle Health Region. At the time of data collection, the health regions were separate, but they will soon be amalgamated under the Saskatchewan Health Authority. The Saskatoon Health Region is the largest health region in the province serving 342,362 local residents in neighbouring cities, towns, villages and First Nation communities.³⁵ The health region consists of a referral center providing specialized care to thousands of patients across the province. The Saskatoon Health Region also has programs and services in 75 facilities including nine hospitals, 30 long-term care facilities, and numerous primary health care sites.³⁵

The Regina Qu'Appelle Health Region provides tertiary care to residents of Regina and surrounding areas in two hospitals – the Regina General Hospital and the Pasqua Hospital.³⁶ The region offers a full range of services including hospital, rehabilitation, community and public health, long term care and home care services to meet the needs of 287,000 patients.³⁶

In Saskatchewan, there are currently 1,179 CKD patients being followed in the provincial CKD programs.³⁷ The Regina Qu'Appelle Health Region Renal Program began in June 2001 and consists of: Chronic Kidney Disease Program, Renal replacement therapy, hemodialysis (in-center, peritoneal, home, get-away, global), and the Kidney Stone Prevention Clinic.³⁷ The Saskatoon Health Region renal program is situated at St. Paul's Hospital.³⁸ Renal services available in Saskatoon include: hemodialysis (in-center), hemodialysis in a community setting (i.e. Cameco Community Renal Health Center), home-based therapies (peritoneal dialysis, home dialysis, and hemodialysis satellite units), the Chronic Kidney Disease Program and the Saskatchewan Transplant Program.³⁹ The primary focus of both programs is early referral, assessment, education, on-going monitoring, and management of CKD by a team of nurses, physicians (19 in total), pharmacists, dieticians and social workers.^{37,38}

The Saskatchewan Transplant Program has offices in Saskatoon and Regina.³⁷ The program was established in 1989 to facilitate organ and tissue donation for Saskatchewan residents. All kidney transplants are performed in Saskatoon and follow up care is shared between the two sites.³⁷ The focus of the program is to: provide transplant education to patients and families, facilitate the listing of patients on the waiting list, coordinate and participate in organ and tissue donation, and to promote transplant awareness and education to other health

providers and the public.³⁷ Transplant follow up care at both sites (Saskatoon and Regina) is provided by a team of transplant physicians, coordinators, pharmacists, dieticians and social workers.³⁷

Renal pharmacists

In total, there are 13 renal pharmacists in the province. Renal pharmacists in both health regions are responsible for providing medication management services to patients with CKD, hemodialysis, peritoneal dialysis or a kidney transplant, and to ensure patients take medications safely and effectively. This involves reviewing laboratory results, assessing for drug-related problems, and making recommendations to the renal team. The renal pharmacist also communicates with the patient to address any medication concerns. The role of the renal pharmacist may vary, depending on the setting. However, in Saskatoon and Regina, the renal pharmacist is the generally first point of contact for medication-related issues. Renal pharmacists in both settings routinely receive calls from patients and other health care professionals, provide medication management services, including writing, reviewing or assisting with prescriptions-related activities.

Study Design

A qualitative study was undertaken using a phenomenological methodology.⁴² This approach utilizes the meaning and significance of personal experiences to capture perceptions and thoughts regarding a certain phenomenon.⁹ The perceptions and experiences of health care workers involved or affected by the SMAP program were explored to gain insight into the current SMAP process in renal patients.

Study population

Renal pharmacists and nephrologists involved in the provision of care to renal patients in Saskatoon and Regina, community pharmacists who have been practicing for at least 2 years, and patients with renal disease.

Interview vs. Focus group

In depth interviews explore the experiences of participants and the meanings they attribute to those experiences.⁴² The use of open ended questions in in-depth, semi-structured interviews can reveal much about the health topic at hand.⁴² Focus groups, on the other hand, involve shared discussions between four to 12 participants that are often led by a moderator.⁴² The concept of the focus group is built on the notion that group interaction will encourage respondents to explore their shared perspectives.⁴² In this study, interviews were conducted with the participants one on one, to minimize the potential for power roles within the different professionals involved (community pharmacists, renal pharmacists, nephrologists) and the possibility that some individuals may not be comfortable sharing their opinions in a group.

Ethics

The application was submitted to the Behavioral Research Ethics Board (REB) for approval,⁴⁴ and was jointly reviewed by the Saskatoon Health Region and Regina Qu'Appelle Health Region since the research was conducted in both cities. Operational approval in both health regions was obtained.

Recruitment

The method of recruitment varied depending on the cohort:

1. Renal pharmacists:

Criterion sampling, a type of purposeful sampling was used to identify participants. This method of sampling involves predefining the criteria and then inviting subjects that meet the criteria to participate in the study. To be eligible to participate in this study, renal pharmacists had to be working in either the Saskatoon Health Region or the Regina Qu'Appelle Health Region, and provide routine clinical care to renal patients (CKD, dialysis or kidney transplant). Of the 13 renal pharmacists that met the criteria, 12 were invited to participate in this research. (The other renal pharmacist was not invited to participate, since she is a member of the research team).

2. Nephrologists:

Criterion sampling was used. All nephrologists that currently practice in either the Saskatoon Health Region or Regina Qu'Appelle Health Region were personally emailed to invite participation in the study (n=14).

3. Community Pharmacists:

Maximum variation is a type of purposeful sampling that involves observing the extremes of a certain phenomenon to capture a variety of perspectives. We aimed to obtain a heterogeneous cohort in terms of the following characteristics: pharmacist age, gender, workplace location (independent versus chain, rural versus urban). All community pharmacies within Saskatoon and Regina were initially faxed a notice about the study, to invite participation. Since only two pharmacists responded to the study invitation, the research team personally reached out to several pharmacists to invite participation, keeping in mind the above criteria. We aimed to recruit at least 10 community pharmacists.

4. Patients:

Criterion sampling was used. All renal patients, cared for by the renal teams in either Saskatoon or Regina that had previously received an SMAP were eligible for participation. To recruit patients, the renal pharmacists were provided with the study advertisement, and were asked to identify willing participants from the clinics. Names and contact information for willing participants were to be forwarded to the research team. We aimed to recruit at least 10 patients.

Interviews

A semi-structured interview guide was drafted for the interviews (Appendix B).⁴³ The interview guide was reviewed by three members of the research team and modified accordingly. It was then piloted on one nurse and one community pharmacist who were not participants involved in the study.

Participants were personally contacted by the research team to set up a mutually convenient time and location for the interviews. The interviews were conducted in a private area at a place and time that was most convenient for the participant. The interviews continued until data saturation was reached. They were expected to take approximately 25 minutes each,

however, some interviews required more time (45 minutes). The sessions were audio recorded, and notes were taken by the researcher.

Data Analysis

Audio recordings from the interviews were transcribed verbatim. The transcripts were input into NVivo qualitative software. The data was coded by A.A. and reviewed by H.M. Discrepancies between coding were resolved by debate and discussion. Common statements, words and phrases were categorized into themes (also known as nodes). Quotations from the participants were included in the results to add trustworthiness and transparency to the data.

Word clouds were formulated to demonstrate the word frequency amongst the interview groups. Words that appeared in larger font in the word clouds were mentioned more often, while smaller words were less frequent. Iterations of words (such as the plural form) were consolidated. In order to avoid smaller words such as “the” from appearing in the word cloud, a minimum word length of “6” was selected and we restricted the query to the 300 most commonly occurring words.

Results

Overall, 29 participants were successfully recruited to participate in the study, including 19 pharmacists, eight nephrologists and one patient. Recruiting patients was particularly challenging, since the research team had to rely on the renal team to identify patients, and pass on their contact information. Although the renal pharmacists seemed enthusiastic and willing to assist with recruitment, only one patient's name was passed on to the research team. The research team therefore opted to modify the protocol and exclude patients from the analysis.

Renal Pharmacists

Ten renal pharmacists (five from Saskatoon and five from Regina) participated in interviews (Table A). All pharmacists were somewhat familiar with the SMAP process, and had experienced it (by receiving reports or communicating with patients or community pharmacies), either directly or indirectly. Six themes emerged from the narratives, including: “renal patients have unique needs,” “negative experiences with the SMAP process,” “duplication of service,” “the importance of communication and collaboration,” “challenges,” and “suggestions.”

Table A: Demographic Information for Renal Pharmacists

Name	Age range*	Years in Practice*	SHR/RQHR*	SMAPs reviewed
Renal Pharmacist 1				2
Renal Pharmacist 2				1 for sure. Remembers 2 from the past.
Renal Pharmacist 3				6 written and others were phone calls
Renal Pharmacist 4				3 per year
Renal Pharmacist 5				1 report
Renal Pharmacist 6				One report per month

Renal Pharmacist 7				Hasn't seen report but has seen recommendations
Renal Pharmacist 8				Less than 5 per year
Renal Pharmacist 9				2 or 3
Renal Pharmacist 10				10 over 3 or 4 years

* Data collapsed for confidentiality

1) Renal Patients Have Unique Needs

All 10 renal pharmacists discussed how renal patients are complex (referenced 46 times), and their unique needs may be difficult to deal with in a community pharmacy setting. Renal Pharmacist 1 stated, *"They are complicated patients, on multiple medications, and a one-time snapshot doesn't really tell the whole picture. So unless the community pharmacist has the ability to continuously perhaps look at this patient every few months or whatever..."* Renal Pharmacist 5 said *"...they have multiple health issues, they are on so many drugs, and it is a specialized area. So unless you work in transplant or renal, it would be hard to make appropriate recommendations as a retail pharmacist for a medication assessment."*

Five pharmacists specifically mentioned that dialysis patients require specialized care. According to Renal Pharmacist 7: *"...it is just that the dialysis patients are a small, select, specific group, and we are fortunate that we do have renal pharmacist support for them. So in most cases a global medication review is done on a regular basis for all of those patients anyway in a dialysis specific way."* Several common phrases and terms were referenced across interviews, including "specialized," "complexity," "multiple health issues," "multiple medications," and "multiple comorbidities."

2) Negative Experiences with SMAP Program

Negative experiences with the SMAP program were experienced by all renal pharmacists and referenced in 27 quotes. Several reasons were offered, the most common focused on inappropriate recommendations (referenced 13 times).

Renal Pharmacist 4: *“...it was a recommendation for an ACE and this patient’s kidney function, I think their creatinine is in the 400-500s and their K is 5, so an ACE is not appropriate for this patient.”*

Renal Pharmacist 8: *“A pharmacist felt that amlodipine was of the same category as Ramipril and felt that it was a duplicate therapeutic medication. ...The pharmacist actually didn’t realize what the components of Caduet were and was making recommendations based on that.”*

Renal Pharmacist 3: *“This one that we got was not signed, no consent, we looked and hydralazine is not a diuretic. And for example, recommendations were things like ‘separate calcium from calcium channel blockers’, which in reality, right, is likely not a concern, but the patient came in quite concerned.”*

Another pharmacist discussed an inappropriate recommendation to stop immunosuppressive medications in a transplant recipient because of the patient’s renal function; a recommendation that potentially could have resulted in serious harm to a transplant recipient. Fortunately, the recommendation was not taken by the family physician.

Renal Pharmacist 10 attributed the negative experiences to the lack of awareness of the specific needs of renal patients. She said: *“What came across to me, is that for the most part, there just didn’t seem to be necessarily an awareness of the specifics of the dialysis patient and sort of the use of certain medications. Sometimes, just for an example, there would be something like calcium, which we are using as a phosphate binder, of course. And so there were recommendations about how to absorb the most calcium, ‘you could move it [the calcium] and adjust timing’ and that sort of thing. Which, of course wasn’t our purpose [for the calcium], and wasn’t suitable in this patient’s case.”*

A second reason for negative experiences could be attributed to issues with communication (sourced in 6 interviews).

Renal Pharmacist 2: *“So I guess I would have to say I am not happy with it [the SMAP process] because there seems to be a lack of communication um between the community pharmacist and the renal pharmacist.”*

Renal Pharmacist 9: *“I even had one pharmacist in the community phone me because they were doing a med review, and they took what I told them and they wrote it and sent it in. So it was like, ‘why are you doing it if I am already?’... I don’t think the [community] pharmacist realized that I would see it [the SMAP], because it was addressed to the physician, but it actually ended up on the [renal] pharmacist’s desk... It was a bad experience for me.”*

Another renal pharmacist described a situation where one of her patients informed her she had received a medication review from the community pharmacy. With the consent of the patient, the renal pharmacist called the pharmacy to obtain a copy of the recommendations, but the community pharmacist refused to provide them.

Negative experiences with the SMAP process also occurred when a problem was identified, but not resolved by the community pharmacist (sources = 2). For example, Renal Pharmacist 2 said, *“So it [the SMAP] came back, and it was really, ‘could you adjust this insulin?’ And we try not to adjust insulin here, because this is a dialysis unit. The person should be having a family doctor... There were no blood sugars given...So it was very incomplete. There was a problem identified but they didn’t really know how to fix it...So it was just like pushing it off, is what I felt.”*

3) Duplication of Service

All of the renal pharmacists expressed concern that the SMAP process replicated the services provided by the renal team (sources =10, references=16).

Renal Pharmacist 9: *“I think if you have a pharmacist already part of the CKD program, and there is already a pharmacist reviewing and assessing for the appropriateness of the medications that that patient is on, I personally don’t think it is necessary to duplicate that in the community setting. Especially when they [the community pharmacies] don’t have access to the patient’s chart, to know what the rationale is, for why this patient is on this medication.”*

Renal Pharmacist 2: *“I don’t think it is relevant to do it when they are followed by an outpatient clinic regularly. Especially when it is multi-disciplinary, and they are seen at regular intervals, so um because there is a lot of background and blood work and*

diagnostic testing that there wouldn't be access to, that would not allow full story and assessment for this SMAP."

Renal Pharmacist 5: *"My concern is that they are not in the best position, and these patients are already followed by a pharmacist, by a multi-disciplinary team of experts in Edmonton and in Saskatoon, so this is in a way a duplication, and in a way the pharmacist in retail is probably not the best place."*

Renal Pharmacist 1: *"But then sometimes, you almost question, like if you look at a lean philosophy, is it not really lean, because then you are doubling, like duplication."*

Several of the renal pharmacists mentioned that the SMAP program may be more suitable for patients who are not followed by a pharmacist.

Renal Pharmacist 3: *"I think that is of limited value for patients in my program...I think it is a valuable service, but it is a time-consuming service that could be spent on other patients that don't have other resources available to them and the renal patients simply do."*

Renal Pharmacist 4 added: *"And I think a community pharmacist's time would be better served looking at a patient who doesn't already have pharmacy support."*

Some renal pharmacists indicated that SMAP recommendations do not offer anything new. According to Renal Pharmacist 3, *"A lot of the recommendations that we saw were being followed already. I will give you an example, like electrolyte monitoring. You know you get a piece of paper and it says, 'well patient X is on an ACE inhibitor, and are you monitoring potassium?' And our patients are monitored regularly."*

4) Importance of Communication/Collaboration

Despite the concerns and negative experiences, all renal pharmacists indicated that they value communication and collaboration with the community pharmacists (10 sources, 18 references). The renal pharmacists discussed communicating about their mutual patients.

Renal Pharmacist 1: *"A lot of patients have close relationships with their community pharmacist, which is excellent and we encourage it [collaboration] ...because, obviously,*

community pharmacists are valuable for that ongoing care. ...At least there should be some working relationship or collaboration, with the clinic to make sure that it aligns with the treatment plan that has been sent out by the nephrologist.”

Renal Pharmacist 2: *“I make a really big point of trying to keep them in the loop as far as like we fax any change we make even if they are discontinued or whatever. We fax prescriptions directly to their pharmacy, and then I always write notes, like why we are doing something or whatever and my phone number is actually on the prescription.”*

Renal Pharmacist 6: *“There are things that I don’t get to or don’t see. Sometimes there are medications that patients have before I even know about it, and there are things that the nephrologists don’t deal with too. They [the nephrologists] like to have their hand in the blood pressure, but they like to leave pain management and even diabetic management to family doctors, so, um I don’t get involved in that as much... It would be nice to be able to have a partner... the community pharmacist is my partner, in that if they are sending other recommendations about some things to a family doctor that helps.”*

Renal Pharmacist 3: *“I get lots of calls from community pharmacists who know their patients are on dialysis. They have my phone number. They have a ton of work that they need to do for all of the patients that they care for, and if they are thinking, ‘I am not sure about this’ and they just give me a call and say, ‘you know, for our mutual patient, this is my concern, what do you think about this?’ ...So I am happy to take phone calls”.*

Several renal pharmacists wondered if collaboration could be improved if community pharmacists were more aware of role of the renal pharmacist (4 sources).

Renal Pharmacist 2: *“I think that if the community pharmacist knew more about us and what our role is, they would use us.”*

Renal Pharmacist 5: *“I don’t even know if retail pharmacists know that there is a Transplant Clinic.”*

The renal pharmacists were asked about when communication should occur during the SMAP process. Eight renal pharmacists preferred that the community pharmacist communicate prior to conducting the SMAP. According to Renal Pharmacist 7, *“I think it would make sense to discuss it with the renal pharmacist first because we keep notes that have gone back to 2003ish on a lot of our patients, if they have been with us that long. So there could very well be something documented as to why something might be the way it is.”* Some pharmacists also felt it was appropriate to communicate prior to the community pharmacist making recommendations. Renal Pharmacist 5 stated, *“So even though we are transplant, we do look a little bit outside the box too. So sometimes it would be nice if they were going to recommend something to touch base with us because maybe we are doing that too.”*

Two renal pharmacists (Renal Pharmacists 8 and 10), however, believed that SMAPs should not be performed on renal patients at all, and encouraged referral to the renal team. According to Renal Pharmacist 8, *“they should refer the patient to the dialysis unit pharmacist, and we are more than happy to do that, and we actually do them regularly here as well.”*

5) Challenges

Renal pharmacists identified several challenges that could be associated with the SMAP process. One renal pharmacist voiced concern that community pharmacists may feel pressure to perform SMAPS. Another discussed the limitations of SMAP coverage, while others indicated that patients do not always tell the community pharmacist that they are followed by other care providers, such as the renal team (2 sources). Multiple caregivers were also cited as a challenge by two renal pharmacists. According to Renal Pharmacist 3: *“Our patients are also followed by several different physicians, and I think that is a challenge too. So as a community pharmacist doing an SMAP you are not just communicating with a family physician but also a specialist, and the reality of healthcare, is that everyone doesn’t always know what everyone is doing. And what a family physician thinks is happening may not necessarily be what the specialist is doing, and that is necessarily not the right thing, but it is the reality. So that is something that is challenging – So these people see...they have many prescriptions, they have several healthcare providers, you know it is a team approach, but sometimes the team is slightly disjointed.”*

6) Suggestions

Several suggestions were provided on how SMAPs could potentially benefit renal patients. These included checking for adherence, reconciling the patient's medications, assessing for duplication of therapy, identifying unusual dosages, focussing on drug interactions, focusing on other comorbidities unrelated to the renal disease, and looking for trends in lab results (each sourced once). Renal Pharmacist 8 discussed the importance of not looking at one isolated value: *"I have heard or discussed with pharmacists, they will look at one isolated value and make recommendations based on that. So then again, when we talk to them we try to teach to look at their trend. Perhaps this was a blip, perhaps they were dry, perhaps they were etc."*

Renal Pharmacist 6 stated that the community pharmacist should only perform SMAPs they are comfortable with. *"I think having a good idea of what you are recommending [is important]. So if you as a pharmacist aren't comfortable with the knowledge that you have -, for example, my knowledge with transplant patients isn't necessarily what the transplant pharmacists have - so I recognize that. I wouldn't necessarily make recommendations for transplant patients without knowing what I need to know before making that recommendation."*

Figure 1: Word cloud depicting most frequently occurring words for renal pharmacists



Nephrologists

Eight nephrologists were interviewed (7 from Saskatoon and 1 from Regina) regarding their thoughts on the SMAP process in renal/complex patients (Table B). Only two nephrologists were confident that they understood the SMAP process. The other six indicated some confusion or did not know about the SMAP program at all.

Nephrologist 2: “*I thought anybody could go to the SMAP program. I am under the impression that patients can self-refer themselves and/or the physicians can refer to the SMAP or community pharmacists can refer to the SMAP at the university. So I assume those are the criteria?*”

Nephrologist 1: “*I don’t know if I understand it correctly, but community pharmacists can do med reconciliations and bill for it. Correct?*”

Nephrologist 7: “*To my understanding for this program, the pharmacist will go over the patient’s current medications and renew it for them?*”

The majority of the nephrologists (n=5) had no experience with the SMAP program, and had never seen a report. Seven themes were identified in the interviews including: “unique needs of renal patients,” “access to renal pharmacists,” “duplication of service,” “concerns about community pharmacist skills,” “various levels of comfort with SMAP process,” “importance of communication and collaboration,” and “other suggestions for improvement”.

Table B: Demographic Information for Nephrologists

Name	Age Range	Years in Practice	SHR/RQHR	SMAPs reviewed
Nephrologist 1				Can’t recall
Nephrologist 2				2 reports
Nephrologist 3				None
Nephrologist 4				None
Nephrologist 5				70 yearly
Nephrologist 6				Haven’t seen a written report before
Nephrologist 7				None
Nephrologist 8				1 report

* Data collapsed for confidentiality

1) Renal Patients have Unique Needs

Unique needs of renal patients were sourced in all eight interviews and referenced 13 times.

Nephrologist 7: *“For us as transplant, we are changing doses based on many other factors, especially the immunosuppression drugs. These drugs usually need to be in the therapeutic range, and we follow the result of those ranges, and we decide if we want to go up or down on the dose. On top of that, also these drugs have a lot of interaction with other medications; therefore, we don’t want anyone to add other medications that might interfere with the drug and make the drug more toxic or less effective.”*

Nephrologist 2: *“Well burden of disease number one, plus comorbidities, right. So there is a unique set of medications that are exclusive or almost exclusive to renal patients, you know, right from the Replavite to Eprex to their One-Alpha...You know, I think dosages are often not always well understood and not always just in the end-stage kidney disease population, but the understanding that someone with a creatinine of 150 could still have a GFR of 30, which is why their Cipro is only 500mg once daily rather than twice a day or why they shouldn’t be on metformin.”*

Nephrologist 5: *“Things like I will see Septra prescribed in renal failure, and they end up with a potassium of 7 and a creatinine, like, huge. I see patients with kidney failure that are given anti-inflammatories all the time. I see patients that are given inappropriate doses according to their eGFR for their medications all the time...They [renal patients] are not as easy to work with.”*

Nephrologist 7: *“There is the complexity of the drug itself and the whole side effect interaction with other drugs, the importance of keeping the dose within a certain limit to maintain a good therapeutic level, and the effect of this therapeutic level.”*

2) Access to Renal Pharmacists

All nephrologists mentioned that they have access to renal pharmacists (sources=8, references=12), and many expressed appreciation for their services:

Nephrologist 7: *“the issues with our medications to our patients usually go through our pharmacists...they take care of this.”*

Nephrologist 6: *“they do a wonderful job for us and we are so blessed to have them.”*

Nephrologist 5: *“I am sure you have heard this before but we have our pharmacists already involved, and we trust our pharmacists, they are all excellent, well trained and they are working with that very small subset of patients, transplant and dialysis patients, and it is a different pharmacological world.”*

Nephrologist 8: *“I do have access to renal pharmacists, right, who are very specialized and are a wealth of knowledge especially with the medications that we are prescribing on our patients. So I think they do an excellent job of working with us to ensure good quality care.”*

3) Duplication of Service

All nephrologists discussed their concerns for potential duplication of service with the SMAP process:

Nephrologist 8: *“I would be a little nervous that the service would be a little redundant, right.”*

Nephrologist 6: *“it’s like three people [the nephrologist, the renal pharmacist and the community pharmacist] doing the same job.”*

Nephrologist 1: *“I think we have great pharmacists here, and we don’t need someone else doing their job, right...I think it is almost like a duplication of service, and I don’t think that the pharmacists that are doing these reviews are necessarily...they aren’t renal pharmacists and our population is a unique population.”*

Some nephrologists referenced concerns about being fiscally responsible:

Nephrologist 2: *“Well I think it is a duplication of work, and I honestly think that people that are in the CKD clinic or people that are followed by the Transplant Program do not need SMAPs. I think it is a duplication of effort, a huge potential for communication problems and drug errors, and it is not cost effective. We are wasting money, and we*

should use that money that is being billed to the government for something else, and the patient becomes hugely confused.”

Nephrologist 4: *“duplication of work process, which in a system like we have now with all of the budget cuts, we really don’t want to duplicate the work as much as we possibly can.”*

4) Concerns about Community Pharmacist’s Knowledge

Six of the nephrologists expressed concern that community pharmacists may not be equipped to perform SMAPs in renal patients.

Nephrologist 8: *“I can see the benefit theoretically, but I think in the real world, without specialized training, that would be a very difficult thing...I think the community pharmacist may not have access to, from a knowledge standpoint, would be issues surrounding drug treatment for conditions that they don’t know or don’t understand, conditions that don’t have guidelines per say.”*

Nephrologist 3: *“Well just the renal failure in itself is a huge detriment because our pharmacists are specialized and only deal with renal failure patients. We notice that even when we go to community pharmacy, the expertise level is different, right... I might prescribe a dosing that a community pharmacist has said that is not right but they are not right because they are not familiar with that patient population.”*

Nephrologist 1: *“I think that all the workings and understandings of renal patients and renal failure patients is so complex that a community pharmacist just doesn’t have a hold on the completeness of treatment of renal disease.”*

Nephrologist 5: *“I think they need a lot more training”*

Some nephrologists provided specific examples of why they believed specialized training was necessary.

Nephrologist 5: *“One person phoned me last week and said that there is no such thing as coverage for the Eprex in renal failure, and I talked to him for like 20 minutes on the phone, and after I was really exhausted. I just asked him to call the pharmacist at the Kidney Health Center to help him, like I mean I don’t know how many more times I can fax this back to you and circle kidney failure, right?”*

Nephrologist 2: *“Well most of them were very well done, but they were missing some information, I thought. For instance, advising that ACE inhibitors should be stopped because the blood pressure was either low or the serum creatinine was high, when if you don’t know all the clinical context of why that individual is on an ACE inhibitor (like do they have proteinuria?), then you shouldn’t be making those kinds of recommendations, because then family physicians do follow them. Or patients say, ‘well the pharmacist said I shouldn’t be on this drug because of blah, blah, blah’, and so the recommendations have been made without all of the information.”*

Nephrologist 8: *“So there was one that a dose adjustment recommendation based on whatever readings she [the community pharmacist] had done, but certainly wasn’t a dose I was willing to accept... There were two recommendations that I can think of where it was to get rid of a pill or to switch from one drug to another drug that in her opinion, was more indicated in certain situations but, of course, not studied in our population.”*

One nephrologist pointed out that the lack of comfort with community pharmacists, may be due to lack of role clarity.

Nephrologist 3: *“the problem is that I don’t really have a good grasp of what a community pharmacist grasps. I think there is a lot of range from pharmacist to pharmacist based on my experience.”*

5) Mixed Comfort Levels with the SMAP Program

The nephrologists had mixed comfort levels with the SMAP program. Some nephrologists spoke highly of the program (n=2). For instance, one nephrologist with experience with the program said: *“there is certainly no harm. I think it is a great program, and I am very*

supportive of the [community] pharmacists doing this because I think it is an additional safety net, they pick things up, and you know if you don't agree with the recommendations, I guess it is more paperwork and that is it, but I think that it is doing a lot of good for patients....Every time I try to think, 'oh boy I am not going to miss anything', they come up with a vitamin D or something."

Other nephrologists believed their patient's SMAPs should be performed by renal pharmacists (n=2). For instance, Nephrologist 4 stated, *"So, I am more of a person that if I see something wrong in the renal clinic, I would rather have it treated so being that our pharmacy and I are more familiar with our patients and all of their concerns, we have different guidelines for blood pressure management than what the general population has. We have specific guidelines for medications for specific diseases including diabetes and hypertension, specific to renal disease, so it would be my preference that we should be managing this in our CKD clinics or in our clinics rather than seeing it managed in the community."* Another nephrologist added it would be unreasonable to expect the community pharmacist *"to be educated on everybody, everything, and every weird drug."*

Six nephrologists had mixed comfort levels with the SMAP process. One nephrologist correlated her comfort level to the personal relationship with the pharmacist. *"...[I am] maybe comfortable and maybe not comfortable, and mostly because I really don't know the level of knowledge of the community pharmacist in regards to people who have renal disease. I think for some of the pharmacists that I know that do them, [I am] extremely comfortable - and I am not just talking about the CKD Clinic or in Transplant - I am talking in the community where I know the pharmacist. But where I don't know the pharmacist I would be uncomfortable."*

It should be noted that all nephrologists indicated that SMAPs may be of benefit in other patient populations, and none of the nephrologists believed the program should be eliminated.

6) Importance of Collaboration and Communication

All nephrologists emphasized the need for collaboration and communication with the community pharmacists (sourced in 8 interviews, referenced in 27 quotes). Four nephrologists specifically indicated they would prefer communication with the community pharmacist to occur before the SMAP.

Nephrologist 2: *“I think before they [the community pharmacist] actually made recommendations, it would be nice if they discussed them with the nephrologist before they actually say to the patient, ‘you know you should stop the ACE inhibitor’. Because maybe there might be very good reasons why I have them on an ACE inhibitor, so rather than confusing the patient there should be more communication up front or prior to recommendations being done... I would hope the community pharmacists aren’t so afraid of calling the nephrologist to ask information because I suspect some of them are.”*

Nephrologist 7: *“I would prefer it to be before so that I can indicate to the pharmacist right away what the patient’s kidney disease is and what my thought process is in prescribing certain medications. Because I have found in my experience that sometimes pharmacists will contact me and say, oh this patient can’t take this medication for whatever reason, and then I will say, actually that is not true, the reason I prescribed this is for this reason, and so just to save some time up front, I would like to be contacted in advance so that we could touch base, everybody is on the same page, and then once the pharmacist does the review, I personally prefer to be contacted directly and just to have this ongoing dialogue.”*

Another nephrologist believed open communication was necessary since physicians and pharmacists perceive things differently: *“I think pharmacists are experts in medications, but then physicians see it from a different point of view. So sometimes we use medications in a way that maybe a pharmacist wouldn’t necessarily think to use, so it is just good to have that dialogue I think. We will just learn from each other”*. She also added that discrepancies between what she and the community pharmacist communicate to patients are very confusing.

One nephrologist perceived communication to be an educational opportunity: *“Because they [the community pharmacists] are dealing with so much in every specialty, I think it gives us an opportunity to say, ‘oh well you know this is why I prescribed this’ or ‘this is why I prescribed it at this dose and if you want, you know, this is the reference to the article, and this is the up and coming guidelines or whatever’. I think that is our responsibility too, as opposed to being in our own little silo. Again, I can’t speak for all.”*

All 8 nephrologists discussed the desire to work with the community pharmacist by using different phrases such as “working together”, “collaboration” and “communication.” As summarized by one nephrologist, *“I think in patients that are complex, we need to work with the pharmacy like a team whether it is community or hospital-based. I am specialized in kidney and if that pharmacy wants to work with complex patients, then they should probably have more training in diabetes or kidney, or hypertension or Parkinson’s or whatever the area is.”*

One nephrologist spoke very highly of community pharmacists. She said: *“I feel like our community pharmacists are great at what they do.”* She also added: *“They have caught many of my dosing issues...So certainly I have had those calls where, do you know the creatinine clearance is like 21 and maybe that drug should be dosed differently? They are excellent at that.”*

When asked how she would feel if a renal patient requested a medication review from his/her community pharmacist, Nephrologist 8 responded with: *“when a patient asks for a medication review, typically they are not asking for, ‘can you change a bunch of my meds?’, ...Typically what a patient wants is to sit down and understand what each drug does, when they have to take each drug, which ones can be taken with food. You know, their concerns about medication review are very different than medical medication review. So I think that is absolutely appropriate, I think they need to have that trusting relationship with their community pharmacist, and I think that community pharmacists are more than educated enough to sit down and say, ‘Ok Mr. Jones this is your immunosuppression, it is really important that you take it every 12 hours that is why we have it in your morning bubble and your evening bubble’ ...I think that a medication review for a patient is a very different thing than a medication review for a doctor, and I think that is incredibly appropriate because if they can’t do that with their pharmacist, I mean why are they going to trust their pharmacist, right.”*

7) Other Suggestions for Improvement

Other suggestions for improvement were mentioned throughout the interviews. Nephrologist 2, in particular, identified several suggestions. *“I think that the benefits of this program outweigh the non-benefits, but I think the program needs to be changed, and lots of the change needs to involve communication between the healthcare providers and sort of outreach to the marginalized patients.”* She also expressed concern over the restrictive age criteria and the

fact that the current program does not capture marginalized patients such as First Nations people, immigrants and refugees. She questioned how cancer patients fit into the SMAP process, and whether alternative medications such as over the counter and herbal medications are being considered in the review process.

Two nephrologists indicated that it would be of benefit if the community pharmacist could provide adherence information to the renal team. For instance, Nephrologist 7 said, *“The best one that would discover this would be the pharmacist in the community, because they are the one dispensing the medication, and if they notice their patients are not filling or refilling their medications on time that is a sign of non-adherence. Usually that is how we know about our patients’ adherence is usually we go through either the computer or direct contact with the pharmacist in the community and ask, and usually they say, oh he didn’t or she didn’t come for a refill for one year, and she only had three months’ medication.”* One nephrologist stated she would like to see community pharmacists providing patient education on sick day management, while a transplant nephrologist suggested that pharmacists could inform the renal team when new medications were prescribed from another source (such as a family physician or walk-in clinic).

Figure 2: Word cloud depicting most frequently occurring words for nephrologists



Community Pharmacists

Nine community pharmacists who had previously conducted SMAPs (seven from Saskatoon and two from Regina) (Table C) were interviewed regarding their perceptions of the SMAP process.

Table C: Demographic Information for Community Pharmacists

Name	Age Range	Years in practice	Type of Pharmacy	Number of SMAPs performed on complex patients
Community Pharmacist 1			Chain	10-12 per month or 30-40 yearly
Community Pharmacist 2			Independent	Roughly 5 med reviews per month with 1/20 complex renal patients
Community Pharmacist 3				Sporadic
Community Pharmacist 4			Chain	Done complex patients. No transplant. Currently not many SMAPs due to staffing situation and time.
Community Pharmacist 5			Chain	Have done complex patients. Can't remember if renal.
Community Pharmacist 6			Chain	1-4 med reviews/month. None on transplant or renal. Complex SMAPs: 1-5 in Nov-Jan2016.
Community Pharmacist 7			Chain	Not sure what defines complex. Does 30-40 SMAPs per year.

Community Pharmacist 8			Chain	20-25 SMAPs per year.
Community Pharmacist 9			Independent	3 SMAPs per month; Done 100s of SMAPs on renal. Can't count how many were complex.

* Data collapsed for confidentiality

The community pharmacists had various methods of targeting eligible patients. Only one pharmacist mentioned having several patients requesting medication reviews, whereas the others offered SMAPs in different ways. For instance, Community Pharmacist 1 said: *“We have had very few people actually come in and ask for a med review. Usually we are the ones offering it to them.”* Community Pharmacist 2 added: *“...in a grocery store it was as they would come by, I would offer and ask to set up a time, and then with the other pharmacy I was working at in dealing with seniors in personal care homes, I would go to the home and talk with the caregiver. There is one home that had a nurse so I could go and review them all with the nurse, and that was a more satisfying experience for sure.”* Community Pharmacist 9 discussed advertising medication reviews by doing public talks for senior residents in his community. He said: *“There are a number of senior residents that are independent in the neighbourhood and I advertise to them by doing public talks. There are about 250 seniors in the neighborhood, and then I open up these talks to questions on the floor, and then I ask people if they want their medication assessed after that, and sometimes they want that, and then sometimes it is just an assessment of someone who is not my patient, and sometimes these people become my patients.”*

Two pharmacists mentioned targeting patients with blister packs. Community Pharmacist 3 stated, *“we encourage them [people interested in starting blister packs] to have an SMAP so that we can go over all their medications, find out all their OTCs and then set up their bubble packs the way they want them.”* Community Pharmacist 4 added, *“We will probably target our blister pack patients first because generally your blister pack patients are on more medications, more complicated and we also get reimbursed that way too, because you get your pill-packing fees and such so it is worth our time.”*

Community Pharmacist 5's approach involved performing initial part of the medication review on the phone and then completing it in face to face, to minimize the time burden to the patient. Another pharmacist discussed using students to help schedule SMAP appointments with patients.

Overall, six themes were identified with the community pharmacists, including "benefits," "various levels of comfort with the process," "challenges," "communication," "the desire to do well" and "suggestions."

1) Benefits of the SMAP Program

Five pharmacists specifically mentioned benefits of the SMAP program. Community Pharmacist 6 provided several specific examples of SMAPs that have improved patient care:

Example 1: *"So I had this guy recently, he was over 80, on phenytoin, his level was taken at 10 am and his last dose was 8am. His level was in range according to the lab; although, at the high end, but when I calculated his total phenytoin levels it was really high. Of course, it was difficult to interpret because it wasn't a true trough. I actually called medask and asked for their help. So I did suggest a decrease, his potassium was also above 5, like it was 5.3 or something and phenytoin can decrease potassium. The only thing he was on that would affect that was an ACE inhibitor, and his blood pressure was like 120/80, so I also recommended monitoring the potassium with the phenytoin level. I don't know the result because this was like 2 weeks ago, so I haven't followed up on that yet."*

Example 2: *"I have an 81-year old, I did the med review in May. She had no creatinine clearance since 2014, so I recommended that in preparation for this. I checked her lab work last week, and there was no creatinine clearance. She takes low dose aspirin, no history of MI or stroke and not diabetic, so I recommended stopping. Inadequate calcium intake and then her vaccinations, she hadn't had tetanus, pertussis or shingles. She did have a shingles shot given in September by us, so that came out of it."*

Example 3: *"I have an 85-year old who takes Aleve once or twice a day for chronic back pain, and also takes ASA once daily, so I recommended trying the Tylenol. He was*

actually taking too much calcium. He was at risk for osteoporosis, but he drank three cups of milk per day, plus three tums per day, plus calcium supplements. So I recommended stopping the supplements and starting ranitidine.”

Example 4: *“75-year old, again Aspirin, no history of MI, strokes or stent. He had history of a GI ulcer and bleed 45 years ago. He had type 2 diabetes, which was diagnosed three years ago, so I recommended reassessing ASA.”*

Example 5: *“I had a 66-year old, she was retired nurse. She wanted to stop her amitriptyline and zopiclone, but she didn’t know how and the doctor wasn’t helpful, so I gave her several protocols. I don’t know if she actually did, she was going to Mexico shortly after, so she didn’t want to make any changes for insurance purposes.”*

Example 6: *“This woman, she was taking 10,000-15,000 units of vitamin A per day. The maximum is 1000. She took AREDS and vitamin A supplements. She was told to do this by her eye doctor and her specialist because she had macular degeneration, and she wasn’t sure if both doctors knew she was taking this much. So I recommended the AREDS only and faxed the specialist, and he actually faxed back that he agreed.”*

Example 7: *“65-year old, he is a blister pack, not taking calcium, he had COPD. He was smoking marijuana, which was not legal marijuana, so I recommended a vaporizer but those are hundreds of dollars, and he said no. He had recent problems with rapid heart rate that he thought was possibly Afib, but he was on the waiting list to see a specialist. So marijuana can actually cause a worsening Afib. It’s possibly transient, and it can decrease with continued use, but I told him to make sure that he mentioned that when he saw the specialist. He also frequently forgot his am meds, which include Mavik and ASA. He reported his usual diastolic blood pressure was 188, and his doctor was aware of that. So I moved his morning meds to the nighttime and informed his doctor.”*

Five pharmacists discussed how patients appreciate having medication reviews performed.

Community Pharmacist 3: *“Usually the patients are so happy to have this one on one time, and they just talk and talk and talk, and they have so many questions. And lots of time, even though you try to gear for about a half an hour, they go over because they just have so much that they want to say. And it seems that they really enjoy that time.”*

Community Pharmacist 9: *“So people tell me that after their assessment they understand their disease better, they understand their medication better. I can help them to take their medication as prescribed to, and I can work with them and their clinician or prescriber to get a good result.”*

Community Pharmacist 7: *“I ask them at the end and almost everyone – I said ‘did you learn anything?’ And if people are being nice, or sometimes you generally know that they did. When you do follow ups with them, especially if I do a follow up where by something we discussed had an action take upon, and I think there is a general appreciation that there was a difference made. Sometimes you do an SMAP and it is for a compliance pack patient and you do it out of some sense of obligation of what we need to do. Sometimes you question how much benefit they got out of it, especially when you are doing it on an annual basis, and ‘hello, we are here again, and let’s talk about that nothing has really changed from last year’, but you are doing it because that is your obligation, and those patients don’t really benefit I don’t think a whole bunch, but the first time almost everyone will learn something.”*

2) Various Levels of Comfort with the SMAP Process

As a group, the community pharmacists (n=9) had varied comfort levels with performing SMAPs in complex and/or renal patients. On one end of the spectrum, Community Pharmacist 9 was very confident performing medication reviews.

“I am very comfortable doing an SMAP on a renal patient. I worked acute care and clinical care for 10 years in the RQHR. I worked in the Chronic Kidney disease clinic in the peritoneal dialysis clinic, transplant clinic and hemodialysis clinic. I did assessments on renal patients all the time for about seven years. I certainly could do something like that regardless of age, younger or older than 65. We had pediatric patients in Regina

that we would work with that as well. I mean I am very comfortable doing stuff like this I could manage blood pressure very easily, I could do calcium, phosphorus, PTH management, cardiovascular medication management, primary or secondary, lots of different things with renal patients, very very comfortably...I can't think of anyone that I would be uncomfortable doing an SMAP with. People if they need a medication assessment, like that is my job. Maybe the only time that I would ever be uncomfortable is with violent prisoners, but as long as there is security with me then that would be fine."

On the contrary, three pharmacists were uncomfortable conducting SMAPs on certain groups of patients:

Community Pharmacist 2: *"Cancer centre, can't touch those meds. Yes like very complex, like on meds that I don't want to dispense, like cancer meds or they are being followed by the renal clinic, and I don't want to get in there. I don't know anything about that so...And also when I was doing home visit med reviews, there were times where I was going to dodgy areas of town, um and in environments with heavy cigarette smoke or thing, that I wasn't really comfortable."*

Community Pharmacist 2: *"I would never feel comfortable adjusting or recommending a dose adjustment. I mean I shouldn't say that I guess. But you would look at the creatinine clearance and eGFR, and if there are any drugs that need to be adjusted in renal failure you could look at that, like sort of take a glance at the dosing and make sure. But I feel like anything that I thought, that they could just come back and have a good reason for it. Like maybe that is just insecurity. I just think they are probably getting really good care [already by the renal team]."*

Community Pharmacist 6: *"Not comfortable with dialysis, post transplant, narcotics for chronic non-cancer pain, cancer patients...Patients under the care of a specialist. Patients who don't speak English. I don't fax lists to translators, and it is never a good idea to use a family member. We often end up doing that but you always wonder. Yea, I was told a story about, I think it was in my injection training, where they used a child to*

translate and the mom had HIV, it was for vaccines, and she didn't want her kids to know."

Community Pharmacist 8: *"I am comfortable with some of them, and but some of them I am like, 'Am I over my head here? Like am I sure I am catching everything?' When they are on a lot of medications from different specialists. Like sometimes they see a psychiatrist, and they see a nephrologist, and they see a cardiac doctor, and that is not that uncommon, and I am like, 'Ok there is just too many variables here'. Like what if, you know, sometimes with the antidepressants there are so much with heart and if they see both of and I am just like, 'I don't know if am going to do good for this patient or if I am going to do harm for this patient'. I am not comfortable with that."*

The remaining five community pharmacists were somewhat uncomfortable with performing SMAPs in complex patients, but would conduct the medication review after conducting the appropriate research:

Community Pharmacist 5: *"I would have to do research on a complex patient, but I wouldn't be uncomfortable."*

Community Pharmacist 7: *"I am not really comfortable with the cancer drugs because we just don't dispense them. My familiarity with them is such that, I think there are times that we don't even know specifically that the patients are on cancer medication. They come to you for everything else. And they go to the Cancer Clinic to get their drugs for that, or if they get treatment, or whatever it happens to be. And I am not always apprised of that. I don't think the cancer clinic has their meds posted on PIP, so you don't even see it there. So if someone came and asked me to do it, if I had a list and some opportunity to put some research time into it, I would try to help them out the best I could, but I haven't come across that."*

Community Pharmacist 3: *"I would definitely need to spend extra time doing homework and catching myself up on all that kind of renal information. Um, so that is one of the*

challenges I find with some of these more complex patients, is that I feel like I have to go back to school or relearn some of these things, that I am not as familiar with.”

Community Pharmacist 4: *“Oh I don’t think I would be that comfortable...Yes, I would be a little bit more leery about the transplant stuff, just because that is not something we see... I know there is the kidney transplant stuff in Saskatoon, but here I don’t see a lot of that. We see mycophenolate more for protecting kidneys, or I have one lady on it for preventing a rash but not for actual transplant rejection or anything. It would take more research on my part to make sure I know....I would never say no. Comfort-wise though, I guess because it is a little bit out of my comfort zone, it is not what I am personally familiar with.”*

3) Desire to do Well

A desire to perform high quality medication reviews that benefit patients was consistently evident in many quotes expressed by all the community pharmacists.

Community Pharmacist 7: *“I don’t just discuss their medications, I discuss how they are doing holistically and try to give them whatever assistance I can or recommendation to the physician where it seems appropriate.”*

Community Pharmacist 2: *“But at the same time, I want to be more involved, than just saying here it is take it three times a day.”*

Community Pharmacist 9: *“When I do these assessments, it is an in-depth assessment...and then come up with solutions sometimes with the prescriber, sometimes without the prescriber, but you are always working with that patient. So lots to do.”*

Community Pharmacist 6: *“It takes me about 20-30 minutes with the patient and 1-5 hours to analyze it and write it up. I can’t do this at work so I have to take it home and work on it on my own time.”*

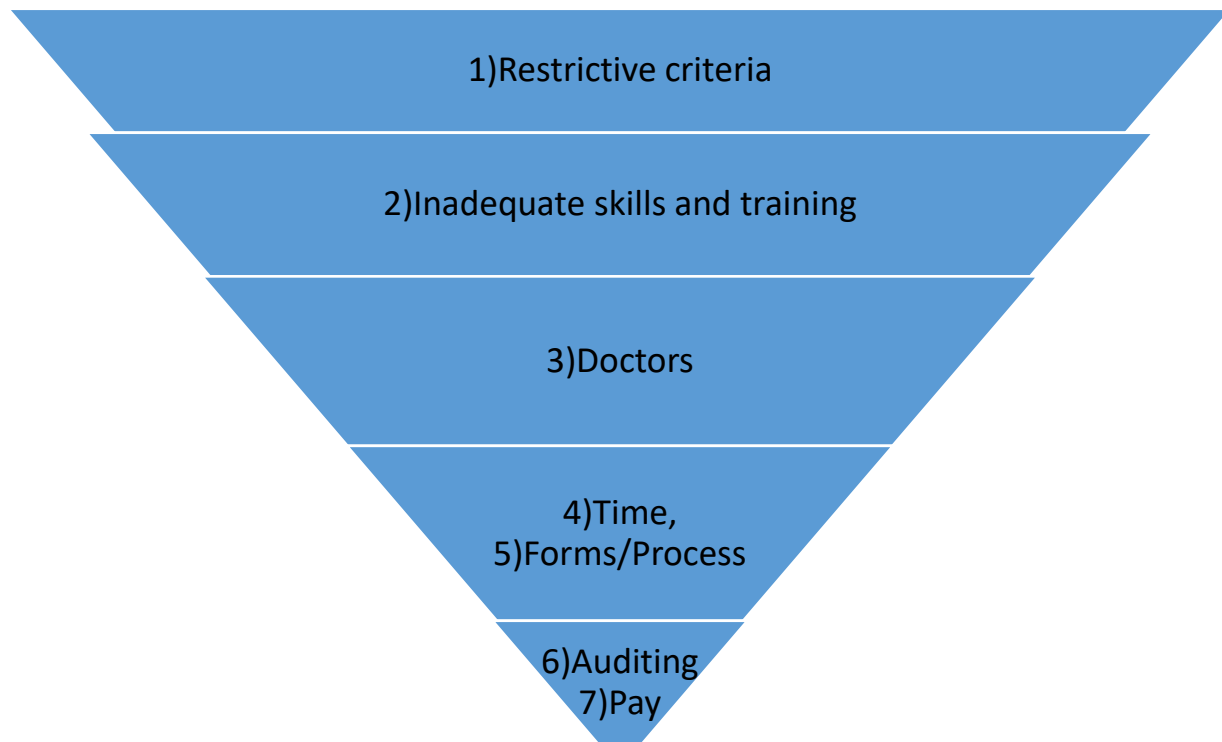
Community Pharmacist 1: “It serves as a great check in every year just to make sure that everything is on track, and we have done several suggestions to people, and we do our best...”

Community Pharmacist 8:” ...so when I have a complicated SMAP, I honestly have to do homework, like I have to sit down and go, ok let me take a look at this, let me take a look at that...”

4) Challenges

All the community pharmacists discussed challenges they experienced with the SMAP process (9 sources, referenced in in 32 quotes). Several challenges were identified that were broken down into 7 subthemes.

Figure 1: Challenges with SMAP Program



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1. Restrictive criteria was sourced in seven interviews, referenced in 11 quotes. All pharmacists (n=7) made reference to the age restriction of older than 65. Two pharmacists also discussed First Nations people and their current exclusion from the

SMAP program, and one pharmacist made specific reference to expanding the program to those who cannot leave their homes or those who have dementia.

Community Pharmacist 8: *“Ok, so I feel that maybe the criteria are a bit too controlled. It is lovely to have 65 year olds on five medications, that captures a lot, but there are a lot of other people that it doesn’t capture. So it was a start, but now maybe it is time to maybe look at whether they feel that this is successful the way it is and the way it is set up and if it is and they see that there is some benefit could they expand it.”*

Community Pharmacist 3: *“It serves a lot of our seniors. I wish the program expanded to some of those who weren’t quite yet 65. We do have a lot of people who are between 50-65 who are on quite a number of medications who would probably benefit from the program as well.”*

Community Pharmacist 6: *“So there are a lot of patients who can’t leave their house, like we always deliver them their meds for whatever reason they can’t leave their house. They are often in the most need of SMAPs because, like we never see them. Sometimes they don’t see the doctors, they need it, and they are the most complex. I would like to be able to do it over the phone. There are also a lot of patients who are like that. They can’t leave their house or have dementia, or they are not able to organize their own medications. They have caregivers and powers of attorney who are very knowledgeable. They go to all the doctor’s appointments, and I would like to be able to interview them.”*

Community Pharmacist 6: *“Mostly they don’t qualify due to age, but some of them are quite complex, they have multiple medications. They want to take herbals or are taking herbals, they are concerned, and they just don’t qualify.”*

Community Pharmacist 3: *“Yes, there are people who are less than 65 that I feel are really good candidates. And you know like I have one coming up. She has*

been wanting to set up bubble packs. She is not quite 65, she turns 65 in a few months, but we have been trying to get her scheduled since December, and it has just been a challenge. But I am not going to turn her away or say 'No, I won't do it until you meet the criteria' so I can bill for it..."

Community Pharmacist 9: *"I don't like the fact that I can only get paid to assess medication in people over the age of 65. There are lots of people who are younger than 65 who need a pharmacist medication assessment...I would open up the program to anyone who is taking 5 or more medications. I think that would be a good start."*

Community Pharmacist 9: *"Yes take off the age. There are pediatric populations that definitely could benefit from this as well. I don't know about numbers of medications for kids, I don't know if anyone knows anything about something like that, but geez if a kid is on a chronic medication that should be assessed, right?"*

Community Pharmacist 9: *"Definitely people of First Nations heritage, who have coverage through NIHB, should have coverage through the Saskatchewan Medication Assessment Program and through the Saskatchewan Drug Plan. With the risk of sounding political, it's just ridiculous that we are not including this population. They definitely would benefit from the SMAP program. It's very disgusting!"*

Community Pharmacist 7: *"There are people that ...you know, you can always do the assessment, you just can't bill for. There are definitely people who are not meeting the criteria. Especially from an age perspective, that you would go, 'You know what, they have a lot of medications'. I don't know why the province wouldn't want me to be able to bill for the service, and I am not sure what criteria they would develop. Maybe x number of drugs or something, but yes there is no question that they could broaden the criteria."*

Community Pharmacist 2: "...just the age limit seems kind of irrelevant. I mean it is relevant, but there are younger people who are on multiple medications as well. I think it should be more multiple medications and not an age requirement. Um and plus people are maybe more interested in preventative health at a younger age too. As you get older there is not as much time to deal with it. Um and then just the fact that NIHB clients can't get it, seems weird to me, because they still use our hospital system."

2. Challenges with skills and inadequate pharmacist training were sourced in 4 interviews:

Community Pharmacist 8: "Hmmm, of course I graduated 35 years ago. Honestly my challenges are quite often. You know, when we went to school it was like, 'Right drugs to the right patient, at the right dose'. Now it is so much more. 'Is this the best drug? Is this the best therapy?' And I struggle with it...it's my own challenge. It's like am I... 'How do I get better at taking the algorithm and then using it?' So when I have a complicated SMAP, I honestly have to do homework. Like I have to sit down and go, 'Ok let me take a look at this, let me take a look at that'. And I still think that I probably miss things. And this a terrible [thing], that is just me...."

Community Pharmacist 6: "I don't think the training is enough. I have done the videos. I have done the CE's. It is just not adequate, and even the 4th year students that we have had in the last couple of years are not properly trained. They don't feel comfortable doing it. They haven't done it before. They look at me and go, 'You want me to.. Oh my god, what do I do?', right, like they are not adequately trained."

Community Pharmacist 3: "I find it challenging to word things appropriately. You know, you want to make recommendations that are good solid recommendations and that make sense, so I find that it takes me a long time to make those letters up afterwards just so that everything sounds good."

Community Pharmacist 2: *“There is no limit to what you should know, and then you just sort of feel paralyzed right? Like should I learn about this, but you may never see that, but you might see that tomorrow, should I learn about this, and so it just almost immobilizes you to do anything. Um, so like, I understand it would be great if we were right sitting beside the doctor, and the doctor said, ‘Oh this patient has this kind of fungal infection, what is the best drug?’ And I knew or I looked it up, and I said ‘Prescribe this’ but we are not at that point. And like I was saying recently that I find like by the time you get to the pharmacy counter and you are giving a patient a medication, all the decisions have already been made. And you are just saying ‘this is why it is good, this is why it might be bad, here you go’. But you are not part of that decision of what might be the better drug or, and it’s hard to have that conversation at that point without looking like you are being judgemental against the doctor or alarming the patient in some way... It is even to the point when I am giving out an antibiotic, I am not even sure how to bring up the conversation as to what infection we are treating. Because do I really need to know, you know...”*

3. Challenges with physicians were sourced in 5 interviews and referenced 6 times:

Community Pharmacist 6: *“Few doctors actually read the letters that we send. Doctors are often hostile to the process. I have had doctors tell patients, ‘these pharmacists who think they are doctors, and yea they don’t know what they’re talking about.’ ”*

Community Pharmacist 3: *“I did, um it was an SMAP that I did for an elderly couple, and they were so happy to sit down with me and so appreciative, and then I sent in the recommendations to the doctor and just the FYI that I had sat down with them...He apparently phoned the pharmacy, and he was upset. He felt it was a waste of his time that he had to read through my letter, and he talked to the technician who said he was so angry, and he kind of just blasted, and he was just furious...So she told him when I was working again, so that if he had things he wanted to discuss that he could discuss them with me. And I never heard from*

him. And every time I saw that couple they kept repeating how happy they were that I sat down with them. They loved the bubble packs that I set them up with. So they were super appreciative, so maybe I was thinking that maybe I didn't hear back from him because they conveyed how happy they were and how they liked the service. I don't know but that was a little bit disappointing."

Community Pharmacist 7: *"It is hard to get them just freaking respond to a letter like that. And I would say maybe 1 out of 3, or 1 out of 4 comes back to us in a format that recognizes that we sent them a letter detailing suggestions or recommendations that they actually respond to. Sometimes they do it at an appointment visit. You will see some of the things that you said they should be taking this or a different dose and you see it is their prescription, how is that, but for the purpose they are asking, it would be really nice if they actually responded to what we are doing. And I shouldn't say that, it is not fair, quite frankly they are not going to make necessarily a dose adjustment, change, addition or deletion probably without actually seeing the patient themselves and I get that, you know, and that makes sense. In fairness to them that is all well and good, and they are putting it in the patient file, but they are not going to act on it unless they see the patient."*

Community Pharmacist 2: *"Um, I did a fairly extensive sit down with a lady whose mother has dementia and is in a care home and doesn't necessarily have much longer to live and is on cardiovascular drugs, and she is sort of saying that they kind of, the family sort of doesn't want her on them anymore and that is not their goal any more. So I wrote a letter, and I did a SOAP note and he was good about it, and you know he just said that he wants to discuss it with them, which I want that too. But it doesn't sometimes go anywhere, which is I guess still fine...it is nice if they actually fax you back and say 'thank you', or 'I got this' ..."*

Community Pharmacist 5: *“Other professions don’t know what they are. Because after we do the med reviews we fax the doctor, and a lot of times we don’t hear anything back.”*

4. Time allotted is not enough was sourced in 4 interviews, and referenced 7 times:

Community Pharmacist 2: *“We like to do a really thorough job. We like to pull lab work. We like to go through it in more depth, and I think that the time allotted for that isn’t really matched. So for med review, if we are expected to just go through their medications and make sure they know what they are used for that is easy. But we like to go into more detail to actually make it really worth your while. And so I think that actually deters us from doing more because, we maybe have too high of expectations for ourselves.”*

Community Pharmacist 4: *“I guess just the time to do a proper job, staffing to be able to have the time to do a proper job [is a challenge].”*

Community Pharmacist 1: *“Time is our biggest challenge. We don’t have a lot of overlap here, so sometimes it can be a challenge to try to fit them in between other people picking up prescriptions or dropping them off.”*

Community Pharmacist 6: *“Uh, it takes me about 20-30 minutes with the patient and 1-5 hours to analyze it and write it up. I can’t do this at work so I have to take it home and work on it on my own time. If I do two a week that is a lot of time. I did one last week, he was on dilantin, and it took me four hours to figure out his dosing. Now the next one isn’t going to be that long, but I have only done two dilantins ever and it took me four hours each time, because they were so separated that I forgot.”*

Community Pharmacist 3: *“Like if time was not a factor at all, then no there would be no time when I would not want to do it.”*

5. Challenges with forms/process was sourced in 4 interviews and referenced in 5 quotes:

Community Pharmacist 6: *“The paperwork is cumbersome and repetitive. The DRP tracking form is inadequate. I have several adjectives for the follow up form tracking form – useless, repetitive, and redundant. The practitioner communication letter is poorly formatted, and does not have enough space. The personal medication record doesn’t expand. It is really annoying if you are doing it on the computer. You have to skip it, but you can’t make it smaller or anything. It is very annoying.”*

Community Pharmacist 3: *“The information on ehealth is not always 100% accurate or up to date, which is a concern for us that could all be improved. Things like immunizations aren’t always on there. The chronic disease tab is underused.”*

Community Pharmacist 2: *“I would say to do everything, um fill out the forms, have the time with the patients, do the after billing and write a fax to the doctor, that is hard to do it in under an hour...My challenges with the process are also getting consent, and I understand the need for it, but it always makes me feel like I am trying to get away with something. Like you know, I need you to sign this or nobody will believe that I was here, or they won’t believe that I really did this, or it makes me feel like I am less than another health care provider.”*

Community Pharmacist 5: *“...those documents that we need to fill out are not really work friendly.”*

6. Not paid enough was mentioned by one renal pharmacist:

Community Pharmacist 9: *“Some people require packaging of medication that are younger than 65, not funded, very unfortunate, and in long term care. Absolutely not, will anybody pay me to package long term care medications. So we do that again for free. It is part of our deal. We get paid less per prescription than any other pharmacy in the province. When you are working in long term care you get*

paid a dispensing fee for every prescription. Community pharmacy you get paid to dispense a medication once and you are only dispensing it once, whereas in long term care you dispense that medication 35 times in 35 days, and you get paid once, so kind of crazy. Um, that's a problem."

Community Pharmacist 9: *"One of the challenges I have is that if you don't do that second yearly med review exactly 365 days from the first, that person now loses their packaging coverage. Maybe give the pharmacy a bit more grace to get through! I would give them like 14 months to the day."*

7. Challenges with Auditing Process (sourced in one interview):

Community Pharmacist 9: *"The audit process from the Saskatchewan Drug Plan was inventive, would be a way that I would describe it. So yes we knew we would get audited, not in a million years would I have dreamt that the Saskatchewan Drug Plan would audit by phoning us and talking to one of my technicians where English isn't always the first language and they will say, we need...like they don't even identify themselves by name, they will say, we need a copy of your SMAP where such and such person faxed to us within the next 24 hours or there is a 100% claw back, good bye. Like that is actually the message I got, and I had to dig to find out who phoned and finally, I did find out who called from the drug plan, and I said, 'who do you need the audit on, because I don't understand who you need this for?', and then I faxed in all the paperwork that I had. It is a very bizarre system that needs to be audited in itself too."*

5) Communication/ Collaboration

Similar to the renal pharmacists and nephrologists, communication was identified as a significant theme by the community pharmacists, particularly the interaction with doctors (see challenges theme). However, only a few community pharmacists discussed communication and/or collaboration with the renal team:

Community Pharmacist 2: *"In the perfect world, it would be great to have visited maybe the renal clinics and to understand that, how they work and what kind of care they get*

there. And you know, is it sort of like they do the blood work while they are there and then someone comes in and adjusts their medications afterwards. You know, I don't really know, but I don't know if that is feasible for every pharmacist so..."

6) Suggestions

All community pharmacists discussed suggestions for improvement of the SMAP program during their interviews. While some suggestions are also identified under the theme of challenges (such as changing the program criteria, and improving communication with physicians, increasing reimbursement etc), community pharmacists also made additional suggestions for both the program and their fellow community pharmacist colleagues:

1. Suggestions for program:

Community Pharmacist 8: *"I think I have a couple of things. One of them, is the idea of when patients ask you questions, then turn it around if they qualify, and that is where it would be nice not to have those qualifications set up. Because quite often, I have had patients who are very concerned about their medications, and I guess I could offer it to them and say, 'but you need to pay'I definitely don't think there should be quotas because that just puts pressure on pharmacists to do something that isn't done well. So I think if you are going to do a med assessment, it has to be done well because patients will then, I mean they talk to each other..."*

Community Pharmacist 6:

- a. *"We need to improve the forms. Make them less repetitive. We need a better mechanism to write and track DRP's, we need to include complex patients regardless of their age."*
- b. *"We need to increase the fee, so I can have more time to do the job. We need better training for us and the students, the practical student training is horribly inadequate. I would like to see doctors educated, I mean I am sure it was in their newsletter, which is written by the College of Physicians, which I didn't read it, but I am sure it was one sentence. I would be surprised if it was complementary."*

- c. *“I think we need better references, like making dialysis references a requirement for pharmacies. Cancer meds, I would really like to see them on PIP, and PIP is incredibly difficult to read, it is so easy to miss things. The formatting is appalling.”*
- d. *“I also think, this is not to do with that, but I also think we should make it a legal requirement for doctors to check PIP before they prescribe.”*
- e. *“I think there needs to be more training especially for the current students. I mean sometimes it is hard to get training out to us who have graduated. If we had better training for current students, I learn from the students that we have. I ask them questions, I find them very valuable resources, and they need more training. I would like more money for each med review so I can have proper time to do a good job, so they can give me more hours for it. I would like to see education to doctors and patients. I would like the ability to order lab tests like phenytoin and creatinine clearance. It is frustrating to spend, you know, five hours on a med review and have the doctor ignore it.”*

Suggestions for community pharmacists from community pharmacists:

Community Pharmacist 8: *“When you see noncompliance on the profile that is also a really good trigger to say, maybe this person needs some education.”*

Community Pharmacist 4: *“I guess finding that work environment that allows you to do your best every day and be able to do these new functions. It is great that we have all the ability to do all of this stuff, but if you don’t have the time...to do it very often and then an opportunity comes up where you get to do it and then you are not comfortable with it because you are like, ‘Oh I took that training like so long ago’. It is finding a place where you can be employed at that allows you to do that stuff.”*

Community Pharmacist 1: *“I think the most valuable advice is to be proactive and don’t be afraid of people saying no, just offer med reviews, and your patients will appreciate them. A lot of them just don’t know what they are.”*

Community Pharmacist 3: *“I think just continuing to do SMAP’s and all these extra patient care services that we can do, and just why people aren’t aware of all the things that we can do and sometimes we just get stuck in our dispensing role and just trying to always remember that there is more than just that.”*

Community Pharmacist 9: *“I think in general people and society recognize good work, so just if you are feeling let down by government, employers, whoever you think, just remember if you contribute positively to society, to individuals just keep doing that, and it does eventually pay off in your mind, in your brain, in your soul, and also in your pocketbook too. People will be known for the good work that you do over time, and that keeps you going. So that would be my advice. Um, keep learning, I don’t know, go back to school if you need to, that would be my suggestion.”*

Figure 2: Suggestions for Improvement of the SMAP from Community Pharmacists

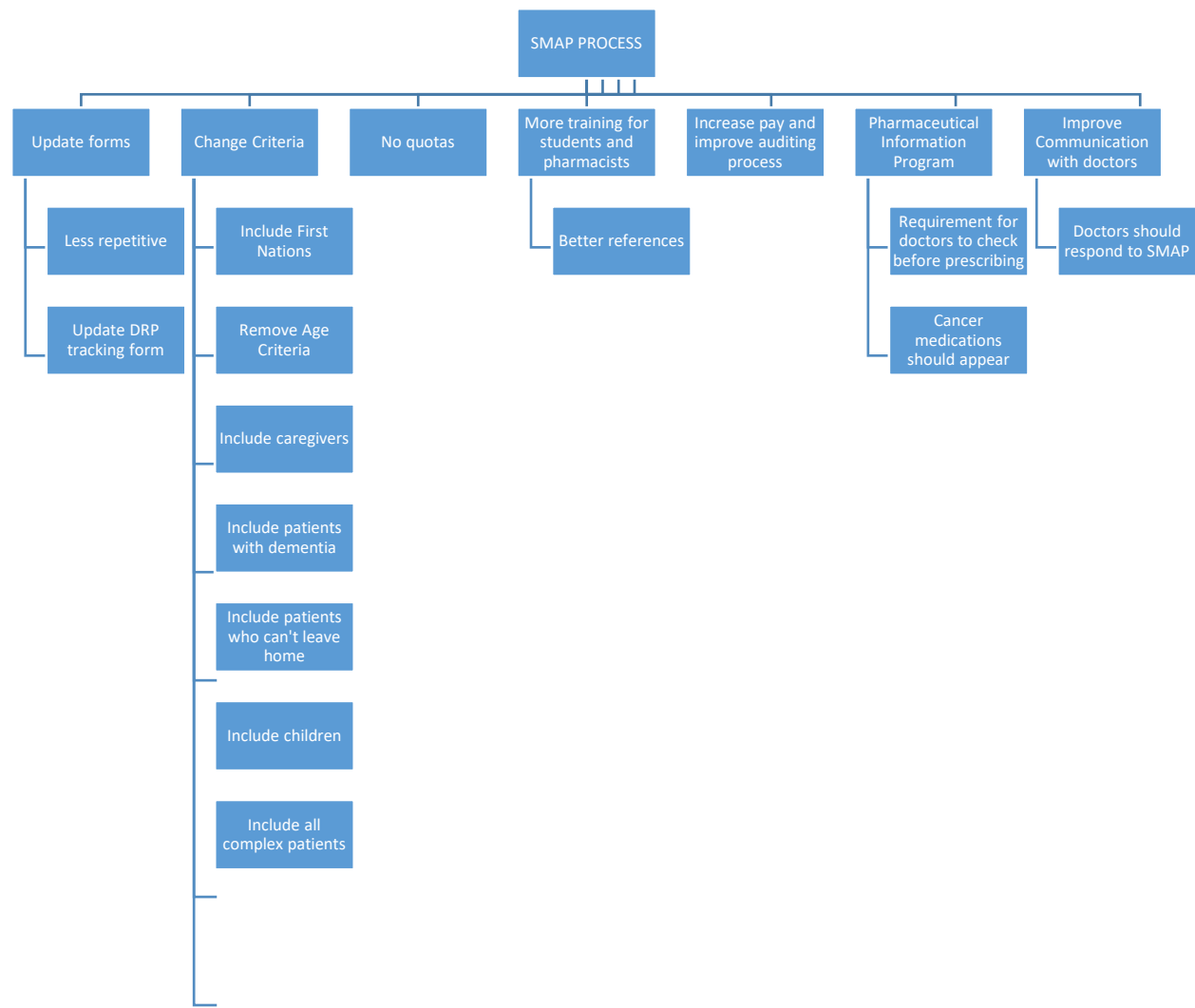


Figure 1: Word cloud depicting most frequently occurring words for community pharmacists



Discussion

We performed a qualitative analysis to investigate the SMAP process in renal patients. The health care providers that were interviewed had various levels of familiarity with the program. We interviewed eight nephrologists, two of which were male and the remainder were females. One of the nephrologists worked in Regina and the remaining seven worked in Saskatoon. It was surprising that even though the program is now four years old, some health professionals have never seen an SMAP report. The nephrologists were the least informed group in this study, with only having two individuals (25%) having first hand, direct experience. One of the nephrologists with experience with the SMAP program, however, discussed seeing 70 SMAPs yearly. The other six nephrologists had very limited knowledge of the program and the community pharmacist's role, and had several misconceptions. For instance, one nephrologist was under the impression that the program involved sending a reauthorization request for refills, and was concerned that the medication review would result in new recommendations without the physician's knowledge. Further, none of the nephrologists were aware of the eligibility criteria for SMAPs (including the two nephrologists that had previously received SMAPs on their patients).

Two reasons could account for the fact that nephrologists in our study were not very familiar with SMAPs. First off, the renal patients are followed by an interprofessional nephrology team. Within specialized care teams, health care providers assume various roles and responsibilities, and or/rely on other members to perform certain tasks. In the renal teams in Saskatoon and Regina, the pharmacists take an active role in reviewing prescriptions, making therapy-related recommendations and dealing with issues pertaining to medication management. It is possible that the nephrologists could not recall having direct contact with the SMAPs, since the pharmacist may have been the individual that reviewed the SMAP.

Another possible reason for the lack of nephrologists' experience with SMAPs, could be that the community pharmacists performing the medication reviews are sending the documentation to the patient's family physician, but not to other specialists within the patient's circle of care. Family care providers and specialists often communicate via dictated letters to keep each in the loop, and carbon copy other interested parties. It could be argued that SMAPs should be treated in the same manner. According to the latest SMAP policy document revised in September 2017⁴, pharmacists are required to send necessary SMAP documentation to all health

care providers in the patient's circle of care as well as the patient's regular pharmacy if the SMAP was not conducted by the patient's regular pharmacy. Sharing all documentation with relevant care providers within the circle of care, helps to ensure continuity of care, improve efficiency, and minimize patient confusion.^{17,20,28} An added benefit is that the specialists would become more familiar with the SMAP program, and the role of the community pharmacist. It should be noted that despite their lack of familiarity with the SMAP program, none of the nephrologists believed the program should be eliminated.

All renal pharmacists interviewed, in contrast, had direct experiences with SMAP reports. Unlike the nephrologists who were speaking from a theoretical point of view, the renal pharmacists were speaking based on experiences they encountered with the SMAP program. Nephrologists' perspectives often mirrored those of the renal pharmacists. It is possible that the nephrologists' 'theoretical' concerns may be based on the concerns of their pharmacist colleagues. As evidenced by the word clouds, renal pharmacists and nephrologists used similar terminology in their interviews. Words such as "duplication," "pharmacists," "recommendations," "education," and "documentation" were commonly used between both renal pharmacists and nephrologists. The renal pharmacists' experiences with the SMAP program were generally negative in nature and all discussed specific situations. One renal pharmacist even brought de-identified examples to the interview to share. They mentioned several concerns, including discrepancies in recommendations made by community pharmacists, as well as community pharmacists making clinical decisions based on single isolated lab values.

The renal pharmacists identified two specific communication-related negative experiences. One renal pharmacist was frustrated that community pharmacists refused to send SMAP documentation to her (even though she was within the patient's circle of care), stating that patient consent was required. The second experience involved a community pharmacist consulting with a renal pharmacist on a mutual patient. After contacting the renal pharmacist for advice, the community pharmacist transcribed the renal pharmacist's recommendations verbatim in an SMAP report, and faxed it to the nephrologist. The nephrologist shared the report with the renal pharmacist, and the renal pharmacist now perceives SMAPs to be a complete duplication of service.

Unique needs of renal patients and comfort with providing care

All nephrologists and renal pharmacists discussed the unique needs of renal patients and complexities of providing proper care to this population. The nephrologists discussed their comfort working with renal pharmacists, because they shared a common understanding of these complexities. Most expressed hesitation towards receiving recommendations from community pharmacists unless they received specialized training, and provided examples:

Nephrologist 5: *“Things like I will see Septra prescribed in renal failure, and they end up with a potassium of 7 and a creatinine like huge. I see patients with kidney failure that are given anti-inflammatories all the time. I see patients that are given inappropriate doses according to their eGFR for their medications all the time...They [renal patients] are not as easy to work with.”*

Renal Pharmacist 5: *“...they have multiple health issues, they are on so many drugs, and it is a specialized area. So unless you work in transplant or renal, it would be hard to make appropriate recommendations as a retail pharmacist for a medication assessment.”*

Interestingly, some of the hesitation from the nephrologists stemmed from the fact that they didn't have a clear understanding of the community pharmacist's role, or of what the community pharmacist knows. For example, nephrologist 3 said, *“the problem is that I don't really have a good grasp of what a community pharmacist grasps. I think there is a lot of range from pharmacist to pharmacist based on my experience.”* Again, it should be noted that nephrologists were speaking from a theoretical point of view, since most had not previously received SMAPs on their patients.

With respect to renal pharmacists, three individuals were extremely uncomfortable with community pharmacists conducting medication reviews on renal patients, based on previous negative experiences. Two renal pharmacists described more of a partnership and indicated being comfortable working a community pharmacist they were familiar with. The remaining renal pharmacists indicated their comfort would increase if the community pharmacist had adequate training and communication with the renal clinic had occurred prior to the medication review.

From the interviews with community pharmacists (n=9), however, it was evident they recognized that renal patients have unique needs, but comfort levels in providing medication

reviews was mixed. Three community pharmacists were uncomfortable, while one was extremely comfortable, and the remaining pharmacists were only comfortable if they had adequate time and resources. The pharmacists that were uncomfortable indicated that they lacked the skills, and adequate resources to perform a thorough medication review, and discussed the dire need for training and resources to increase their confidence. It is noteworthy that the one pharmacist who was ‘extremely comfortable’ had a hospital background and previous clinical experience providing medication management services for renal patients.

Education may offer an opportunity to increase comfort levels to all healthcare providers involved in the SMAP process. Community pharmacists could benefit from tailored education to address specific nuances of providing medication management services to renal patients. In order to increase confidence, education should consist of practical, real world examples, and focus on the application of skills, rather than simply the process of providing the SMAP. Nephrologists, renal pharmacists and community pharmacists could also benefit from education on role clarity, to understand one another’s scope of practice in providing care to renal patients.

Communication and collaboration

A recurring theme in this study was the importance of communication and collaboration, and several of the quotes indicated that there is room for improvement in this domain. For instance, the renal pharmacists expressed concern that community pharmacists may not know that renal patients are followed by a multidisciplinary team involving a renal pharmacist. They recognized the importance of collaboration with the community pharmacist, however, and some suggested efforts that could be undertaken to enhance communication, such as making business cards and contact information more readily available. On the other hand, while community pharmacists generally realized that the multidisciplinary team existed, they didn’t necessarily understand the role the renal pharmacist played.

Nephrologists also identified the lack of adequate communication/collaboration with the community pharmacist as being a major setback in providing care to renal patients in the community setting. One suggestion was for the community pharmacist to initiate communication before the medication review is performed. Nephrologist 7 said: *“I would prefer it to [communication] be before so that I can indicate to the pharmacist right away what the patient’s kidney disease is and what my thought process is in prescribing certain medications.”*

Nephrologist 2 mentioned a specific communication concern she had: *“I would hope the community pharmacists aren’t so afraid of calling the nephrologist to ask information because I suspect some of them are.”*

Community pharmacists also expressed concerns with communication. Some community pharmacists had even had negative or derogatory encounters with physicians regarding SMAPs. While it seems that the nephrologists in this study are quite open to communication, this may not be the case with all physicians. Community pharmacist’s also expressed frustration with not hearing back from physicians after an SMAP had been completed, and not knowing whether their suggestions had been implemented. While we acknowledge that communication by either phone or fax adds workload to all parties involved, it may be a way to improve the effectiveness and satisfaction with the program.

Redefining the purpose of SMAPs

Interestingly, the majority of pharmacists (both community and renal, with the exception of two community pharmacists) suggested either directly or indirectly that the ultimate goal of the medications reviews was to provide a suggestion for change. According to one community pharmacist, *“You know, you want to make recommendations that are good solid recommendations and that make sense.”* Only two of the community pharmacists mentioned the opportunity to provide patient education. As summarized by one community pharmacist, *“I don’t just discuss their medications, I discuss how they are doing holistically and try to give them whatever assistance I can or recommendation to the physician where it seems appropriate.”* Community Pharmacist 9 added: *“So people tell me that after their assessment they understand their disease better, they understand their medication better. I can help them to take their medication as prescribed and I can work with their prescriber to get a good result.”*

Meanwhile, nephrologists discussed the benefits and opportunities for pharmacists to provide education. According to one nephrologist: *“When a patient asks for a medication review, typically they are not asking for, ‘can you change a bunch of my meds?’ Typically what the patient wants is to sit down and understand what each drug does. When they have to take each drug? Which ones can be taken with food? You know, their concerns about medication review are very different than medical medication review.”*

These observations suggest that pharmacists place an exceedingly high value on “making recommendations.” Pharmaceutical care is built on the philosophy of identifying a drug-related problem and making recommendations to the patient’s physician and other health professionals in the circle of care.⁴⁵ It is an outcomes-oriented approach to care that concludes with the pharmacist resolving a drug therapy problem or making a recommendation with the goal of improving patient therapy. However, the SMAP program policy statement outlines several purposes for medication reviews in Saskatchewan, with none of the statements alluding to making a recommendation.⁴ These include: to provide safe and effective medication therapy to seniors living in the community, to improve patient safety and outcomes, to prevent emergency room visits, hospitalizations and drug related problems, to reduce duplication/wastage of medication, to optimize medication adherence, and to assist the patient/caregiver with appropriate and cost effective medication administration.⁴

We realize that in order to sustain funding for programs, pharmacies are required to provide evidence that a certain service is worthwhile by providing solid outcomes such as: how many recommendations were made and how many patients benefited from the service.⁴⁶ Objective outcomes such as patient satisfaction are not always weighted as highly as making a recommendation.^{46,47} However, perhaps it’s time to re-examine our definition of ‘patient benefit.’ According to the community pharmacists we interviewed, patients truly seem to value the service. For example, community pharmacist 9 said, *“Usually the patients are so happy to have this one on one time, and they just talk and talk and talk, and they have so many questions. And lots of time, even though you try to gear for about a half an hour, they go over because they just have so much that they want to say. And it seems that they really enjoy that time.”*

As the most accessible health care provider, community pharmacists are in a prime position to provide education to patients, specifically those who suffer from chronic conditions or those taking several medications. Education can result in improved adherence and better medication-taking qualities.⁴⁶⁻⁴⁸ The World Health Organization (WHO) recommends that health practitioners must contribute to the patient’s decision-making process in taking his/her medication by providing what is called, “therapeutic patient education.”⁴⁹ This involves training patients to adapt to long term medications necessary for treating their chronic condition by emphasizing self-management and highlighting the importance of developing coping skills. It also was evident in our study that community pharmacists wanted to provide the best care

possible for their patients. One community pharmacist discussed doing the SMAP preparation from home in order to prepare adequately for the one-on-one time she spends with her patients. All community pharmacists discussed their desire to work with patients towards a positive result. According to community pharmacist 9: *“When I do these assessments, it is an in-depth assessment... you are always working with that patient. So lots to do.”* According to community pharmacist 1, *“It serves as a great check in every year just to make sure that everything is on track...”* Perhaps the SMAP process should be viewed as a unique opportunity for community pharmacists to check in with their patients and engage in discussions that facilitate self-management, rather than focusing on making medical recommendations.

Suggestions for Improvement of the SMAP Process

The majority of suggestions for program improvements from the nephrologist group were provided by two individuals. These included removing the age over 65 criterion, and including marginalized patients such as NIHB, immigrants and refugees, and providing adherence reports to the renal team for transplant patients. Another nephrologist recommended providing sick day management education to patients. Other suggestions included identifying drug interactions, assessing for appropriate dosing in renal failure (especially antibiotics), and ensure the patient is not taking any over the counter (OTC) drugs or herbals that may affect their kidneys.

Unlike the nephrologists who discussed theoretical suggestions for community pharmacists, the renal pharmacist's suggestions were more practical in nature and stemmed from their experiences with the SMAP program. Suggestions involved focusing on other comorbidities, assessing for duplication of therapy, and notifying the renal team of any inappropriate dosing. The renal pharmacists also suggested only performing medication reviews on patients that the community pharmacist feels comfortable with, and appreciating the complexities in this population.

Since the community pharmacists are personally responsible for conducting medication reviews, naturally they had several suggestions. These involved removing the age over 65 criteria, opening the program for First Nations people, those with dementia and patients who cannot leave their homes. Some pharmacists specifically discussed improving the SMAP forms and improving the auditing process. Another community pharmacist was not satisfied with the

requirement to obtain consent from patients prior to the medication review. She indicated that the need to confirm with a patient signature made her feel as though she wasn't trusted.

The renal pharmacists and nephrologists both identified duplication of service as a major concern, especially amidst the budget cuts and the implementation of the lean philosophy¹ in Saskatchewan. In essence, many renal pharmacists are routinely providing medication reviews already, by nature of their role on the interprofessional team. We speculate that implementing a mechanism to formally acknowledge the renal pharmacist's medication reviews, could prevent duplication of service by the community pharmacist. Since the renal pharmacists within the health region have no means of billing for the SMAP service, another process would need to be created to indicate that an SMAP has been performed. One solution would be to have the renal pharmacist document on the pharmaceutical information program (PIP) when a medication review is completed. The community pharmacist will see the note on PIP and recognize that the patient has already received a medication review. However, in order to formally recognize the SMAPs performed by renal pharmacists, they would likely benefit from additional education on the SMAP process and required documentation. Furthermore, communication is a two-way street; the renal pharmacist would be responsible for sharing the SMAP with the patient's community pharmacy and family physician, in the same manner the renal team expects communication from the community pharmacy.

Education is another potential medium for improving the SMAP process. The one pharmacist that was extremely comfortable with SMAPs in renal patients had previous clinical experience in the area. The majority of community pharmacists (5/9) were somewhat comfortable with performing medication reviews in this population, but discussed how having adequate resources and training could increase their comfort level. To address this issue, perhaps the Continuing Professional Development for Pharmacy Professionals (CPDPP) could consider providing a workshop to community pharmacists that equips them with resources and answers their questions about how to conduct a proper medication review in the general population vs. in specialized patient groups. Enlisting the help of the renal pharmacists and/or nephrologists to

¹ Lean is a patient-focused approach to reducing waste by identifying and eliminating activities that do not add value, that has been adopted by the Saskatchewan Ministry of Health.

provide education, practical experiences and real-world examples, would be of further benefit to community pharmacists.

The renal pharmacists and nephrologists mentioned discrepancies in recommendations as being one of the negative experiences they have encountered with the SMAP program. To address this concern, the renal pharmacists and nephrologists suggested having the community pharmacist call the renal clinic before conducting the review, to ask any questions about the patient and to ensure that everyone is on the same page. Community pharmacists also need to remember the requirement to fax SMAP documentation to all care providers. Keeping all specialists in the loop will increase their familiarity with the program.

The renal pharmacists and nephrologists we interviewed suggested they are most comfortable with the SMAP process if they know and trust the individuals they are working with. This obviously makes sense, and likely explains the mutual respect expressed for one another by the renal pharmacists and nephrologists. Because these health care providers work together in a multidisciplinary clinic, their comfort and trust has increased. A recent study by Farrell and colleagues illustrated how over time physician perceptions of pharmacists can be improved, resulting in increased sharing of responsibilities.¹⁶ Unfortunately, just faxing an SMAP is likely not enough. Phone calls to discuss the patients directly, and personal introductions will likely go a lot further for building relationships. All parties agreed that improving communication and collaboration would be beneficial, and could ultimately enhance patient care.

Nephrologist 7 specifically mentioned how community pharmacists are in an ideal position to provide information to the renal team about adherence. He said: *“The best one that would discover this would be the pharmacist in the community, because they are the one dispensing the medication, and if they notice their patients are not filling or refilling their medications on time that is a sign of non-adherence. Usually that is how we know about our patients’ adherence is usually we go through either the computer or direct contact with the pharmacist in the community and ask...”* Certainly other opportunities exist within the communities to enhance care as well. In pharmacies that have a system in place to synchronize patients’ medications, transplant patients would be ideal candidates for such a program. This program could also bridge the communication gaps between the renal team and community pharmacy.

Limitations

We acknowledge that the lack of renal patient perceptions on SMAPs, is an important limitation of this study. We intended to interview renal patients that had received a previous SMAP, and had incorporated a process for the renal team to identify these individuals, and ask them to partake in the study. However, as the research team, it was unethical of us to contact patients directly unless previous consent was obtained to release their personal information. Since only one patient was identified by the renal teams, we excluded this section from our analysis.

Although every effort was made to include all nephrologists and renal pharmacists in Saskatchewan and Regina, not everyone participated. With regards to community pharmacists, we initially faxed community pharmacies inviting their participation in the study. Since we only received replies from a few individuals, we resorted to personally asking specific community pharmacists to participate. We strived to achieve an adequate representation of pharmacists with respect to gender, location (rural and urban) and age. However, it should be noted that the perceptions of the community pharmacists in this sample may not adequately reflect the views of all community pharmacists in Saskatchewan.

The interviews were conducted by A.A., a researcher, who is also a community pharmacist, and this could be perceived as both a limitation and a strength. On one hand, A.A. may have unintentionally used her own personal bias to guide the questions in a way that influenced the results. On the other hand, A.A.'s experience with the SMAP process likely allowed her to delve deeper into specific topics and to provide a level of understanding that would not have been possible if the interviewer had no familiarity with the process. In order to minimize the potential for bias, the research team was also comprised of renal pharmacists as well as external members with no internal knowledge of the SMAP process in renal patients.

Since qualitative coding is, by nature, a subjective process, the introduction of bias is inevitable. In order to ensure to minimize the potential for bias, the initial coding was performed by A.A. (a community pharmacist), and then reviewed by H.M. (a renal pharmacist, who was blind to subject identity). Discrepancies were resolved by discussion. A neutral third party was identified to resolve any disputes, but this assistance of this individual was not necessary.

Finally, the intent of the project was to explore health care providers perceptions. That is, this qualitative study did not assess the quantity and quality of SMAP recommendations, and offers an opportunity for future study.

Conclusion

We undertook a qualitative analysis to explore the perceptions of health care providers involved in the SMAP process of renal patients in Saskatchewan. Despite some negative experiences, none of the participants we interviewed believed the program should be eliminated. Community pharmacists have mixed levels of comfort providing SMAPs for renal patients, but expressed the desire to provide the best care possible. In order to improve the service in renal patients, we suggest several recommendations: 1) Medication reviews should be viewed as an opportunity to optimize patient care, which may involve providing support and education to patients, and does not necessarily need to result in a recommendation. 2) Medication changes should only be recommended if the drug-related issue clearly poses a risk to the patient and is thoroughly understood by the pharmacist. In situations where the pharmacist is not certain about the issue, an inquiry to the physician or health care team should be undertaken. 3) Changes in therapy should be communicated with all care providers. 4) To minimize duplication in services, renal pharmacists should be granted the ability to formally perform an SMAP from the clinic setting. 5) All care providers should make efforts to improve communication, which in turn will lead to increased trust, collaboration and optimal patient care.

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Appendix 1: Interview Guide

Nephrologists and Renal Pharmacists

1. How familiar or unfamiliar are you with the Saskatchewan Medication Assessment Program (SMAP)?
2. If not familiar, a description will be provided (Appendix 3)
3. How satisfied or unsatisfied are you with the SMAP process?
4. If answered not familiar in question #1, theoretically do you think this service would be of use to you? Please elaborate.
5. What types of challenges (if any) are present with the SMAP process?
6. If answered not familiar in question #1, what kind of challenges do you perceive could be associated with this?
7. How comfortable or uncomfortable are you with community pharmacists performing SMAPs on renal patients or other complex patients?
8. What suggestions (if any) would you have to improve the SMAP process in renal and/or complex patients?
1. Is there any other information that could be provided by the community pharmacist that would assist with optimizing patient care?
2. Are there any suggestions to improve communication?
3. Are there any suggestions to minimize duplication?

Place of employment:

1. Saskatoon Health Region
2. Regina Qu'Appelle Health Region

Community Pharmacists

1. How satisfied or unsatisfied are you with the SMAP process?
2. What types of challenges (if any) are present with the SMAP process?
3. What are your experiences with communicating SMAP information to other health professionals?

4. How has time impacted your ability to prepare for and/or conduct SMAPs?
5. In your opinion, how has funding (or lack thereof) affected your ability to perform SMAPs?
6. What (if any) are the challenges you face when trying to access necessary patient information to conduct SMAPs?
7. How comfortable or uncomfortable are you with performing SMAPs on renal patients or other complex patients?
8. About how many SMAPs have you performed on complex patients?
9. In your opinion, what kind of skills should community pharmacists acquire in order to conduct SMAPs on a complex patient?
10. What suggestions (if any) would you have to improve the SMAP process in renal and/or complex patients?

Place of employment:

1. Urban 2. Rural 3. Chain 4. Independent

Patients

1. I understand you have recently participated in a medication assessment. Did you request this medication assessment?
 - If yes: Why did you request this service?
 - If no: Do you know why your pharmacist offered you this service?
 - If neither: How was the service arranged?

2. Can you tell me what you know about the Saskatchewan Medication Assessment Program (SMAP)?

Probes:

- Who is eligible to receive a medication assessment?
- What is the purpose of the SMAP?
- Is the SMAP performed using a standardized form?
- Is there financial compensation to the pharmacy for the medication assessment?

3. What kind of information did the community pharmacist discuss with you during your appointment?

Probes:

- Did the pharmacist discuss your medical conditions with you?
- Did the pharmacist do any assessments with you such as Framingham or CANRISK?
- If you are using any devices, did the pharmacist assess your technique?
- Did the pharmacist discuss non-drug measures such as diet and exercise and/or provide you with tools to make healthier decisions?
- Did the pharmacist perform a physical assessment? (i.e. check your blood pressure, do a head to toe assessment...etc.).
- Did the pharmacist ask you any questions about laboratory tests?
- Did the pharmacist make any suggestions to you about how to take your medications more easily or how to improve your health?
- Did the pharmacist send a report to your doctor and did your doctor speak to you about it? Were there any changes to your medication?

4. How comfortable or uncomfortable were you with your pharmacist performing your medication assessment (Why or why not?)

5. Describe your relationship with the pharmacist/pharmacy prior to undertaking the SMAP process with them? (i.e., did you know them well? Etc)

6. Has the SMAP process changed your relationship with the pharmacy in any way, and if so how?

7. What suggestions (if any) would you have to improve the SMAP process from your perspective?

8. What is your opinion about having future medication reviews with your community pharmacist? Why?

9. On a scale from 1 to 10, with 1 being the lowest, how well did your community pharmacist do as far as conducting a thorough medication review and addressing any concerns you presented him/her with?

Demographics:

- Age: _____
- Gender: M/F
- Occupation: _____
- Medical condition: _____ (transplant/dialysis/CKD)
- Where do you have your prescriptions filled:
 - Chain (pharmacy franchise)/Chain (grocery/department store)/Independent pharmacy
- Location: Urban/Rural